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# Marine Review

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NEW YORK

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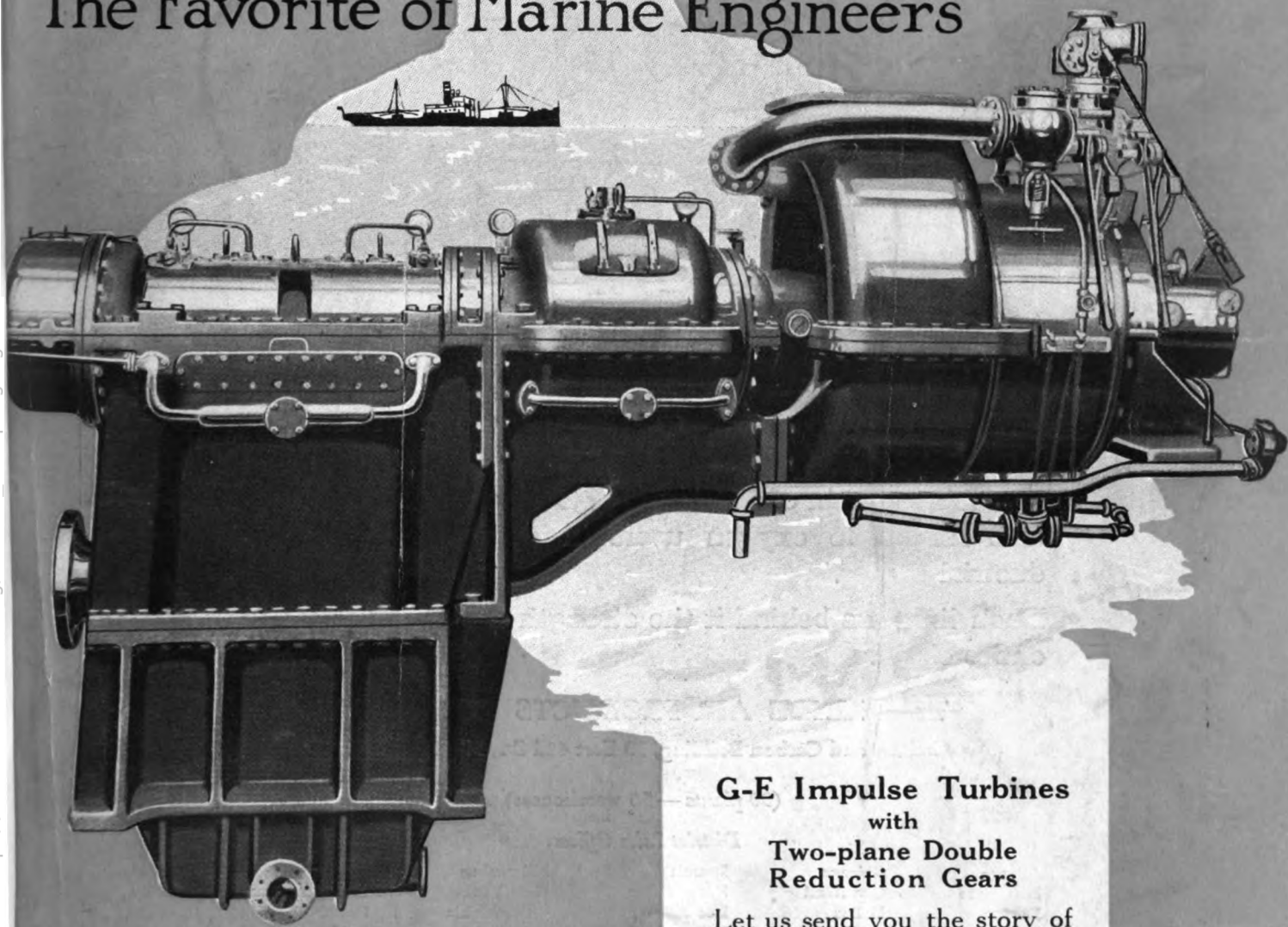
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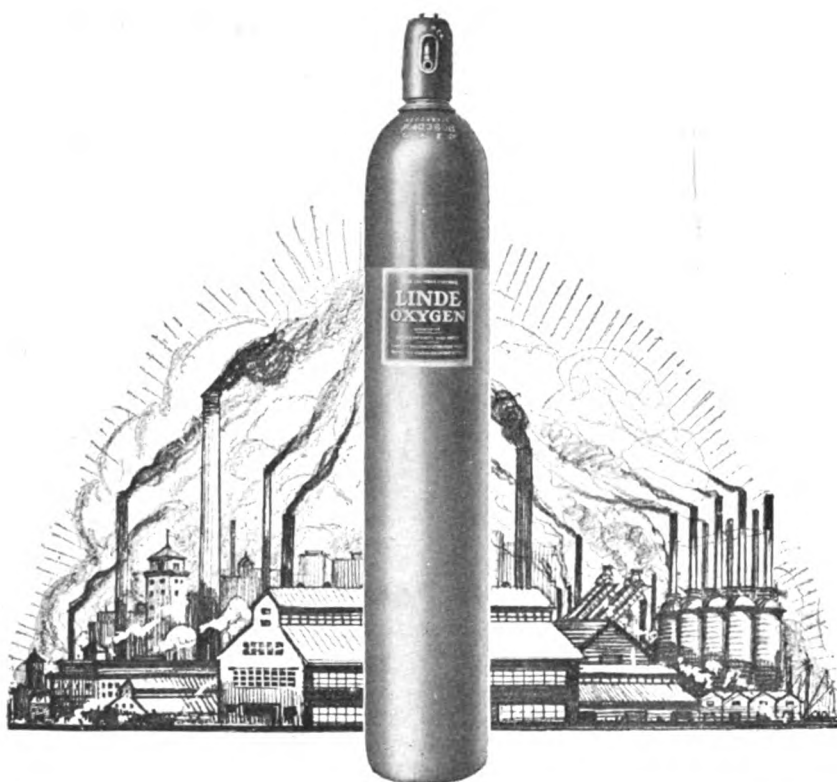
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# Marine Review

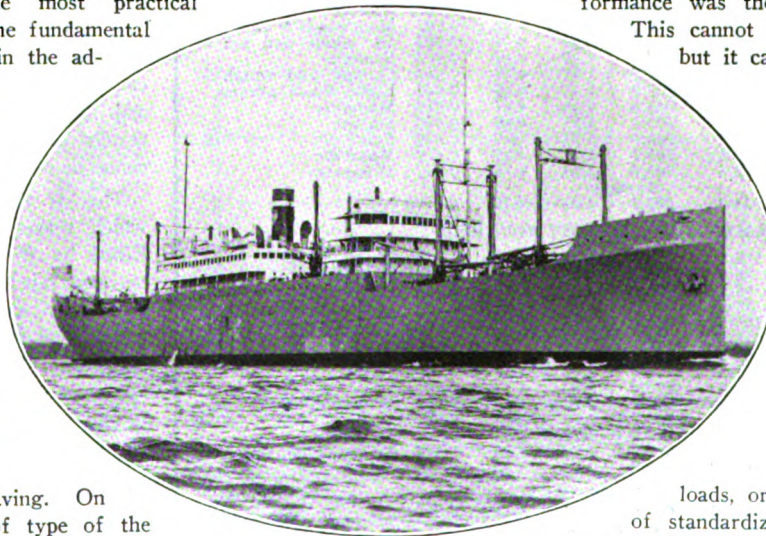
Standards Have Been Set for Boiler Room Performance in These 502-Foot Liners

## Set Fuel Standard For 502-Foot U. S. Liners

COMMON sense and energy in dealing with one of the most important problems in the economical operation of the merchant marine, are indicated in the initial results achieved by the fuel conservation committee appointed by the shipping board. This committee apparently is not functioning according to old fashioned methods. In the first place, it actually is bringing out a complete practical analysis of and definite standards for the operation of a certain class of ships now in service. In the second place, in these results is evident a judicious application of scientific investigation as well as actual performance. The most practical minded men will concede the fundamental value of theoretical study in the advancement of the art of shipbuilding and operation, but when a ship is afloat and in service practical considerations must be given due weight in order to accomplish best results. That is the encouraging feature of the work now under way by this committee; its recommendations and standards are practical; they are possible of accomplishment under service conditions and yet point to a considerable saving. On account of the diversity of type of the ships owned by the government and now in operation

it was decided to catalog them and so divide the fleet into a minimum number of different classes or types. The factors entering into classification are type of boilers, type of propelling machinery, hull design, kind of fuel, type of auxiliaries, and the propeller design. In the choosing of a factor of performance not only the theoretically ideal measure but the practical determination of this and other factors under service conditions, were considered. The factor which finally was decided upon as best from all angles, less subject to variables and most readily and accurately applicable to actual performance was the mileage per ton of fuel.

This cannot be called a scientific factor but it can be determined readily and with a degree of accuracy, and after all the final and most important question in regard to any ship is: How far and with what load can she go on a unit of fuel? The class first studied was the 502-foot or President class of passenger and freight ships. In order to determine the fair, practical and efficient mileage per ton of fuel at different speeds and at different loads, or at different drafts, a series of standardization curves were computed for drafts of 20 feet, 24 feet, 28 feet and 32



PRESIDENT MONROE, ONE OF THE CLASS FOR WHICH STANDARDS OF FUEL PERFORMANCE HAVE BEEN ESTABLISHED



## Operating Performance of Seven Sister Ships

DATA FOR PERFORMANCE STANDARDIZATION: 502-FOOT PASSENGER AND FREIGHT VESSELS  
STEAMSHIP PRESIDENT POLK

Draft feet, inches	R.P.M.	Observed speed	Tons fuel per 24 hours	Pounds fuel per mile	Knots per Ton			Weather
					A	Theo.	Correction	
					Actual	retical	factor	
19 11	91.4	13.4	58.8	409.6	5.47	4.59	1.191	Calm
19 8	96.0	14.7	63.6	403.8	5.55	3.66	1.517*	Calm
18 0	102.1	14.56	68.4	438.5	5.12	3.74	1.368	
19 0	96.0	12.9	69.3	501.4	4.47	5.05	0.889	Fresh head winds
19 1	105.8	15.0	83.8	521.5	4.30	3.52	1.221	Moderate
19 9	104.0	14.6	78.8	503.8	4.44	3.75	1.183	Moderate
23 9 1/4	93.49	13.27	73.0	513.5	4.37	4.58	0.953	
22 0 1/4	94.48	13.49	86.4	556.3	4.03	4.50	0.894	
21 7	96.1	13.56	70.8	487.4	4.54	4.43	1.025	
22 5 1/2	104.6	14.7	104.0	600.3	3.39	3.58	0.948	Smooth
22 5 1/2	96.3	13.59	75.0	515.1	4.35	4.35	1.000	Smooth
24 0	91.1	12.97	64.2	462.0	4.85	4.79	1.013	Moderate
23 8 1/4	92.3	13.1	67.5	480.9	4.66	4.71	0.99	Variable
20 5 1/4	91.7	13.44	58.3	404.8	5.51	4.54	1.220	Light
22 11 1/4	94.4	13.38	62.5	436.0	5.16	4.50	1.147	Moderate
22 9	97.0	13.59	73.0	501.3	4.46	4.34	1.028	Light
21 8 1/2	104.1	15.0	84.2	523.9	4.29	3.44	1.247	Moderate
26 3 1/4	94.4	13.08	76.5	545.7	4.11	4.56	0.902	
26 0	95.7	13.31	79.1	554.7	4.04	4.35	0.928	Moderate
24 8 1/4	95.8	13.13	75.7	538.1	4.16	4.53	0.900	Moderate
25 2 1/2	95.5	13.47	65.0	450.4	4.97	4.32	1.150	Smooth
24 3 1/4	92.5	12.67	63.4	467.1	4.80	5.02	0.956	Mod. head winds
25 7 1/2	96.7	13.36	74.5	526.4	4.30	4.37	0.984	Moderate
27 6	101.7	14.2	85.8	563.7	3.98	3.65	1.090	Moderate
22 9 1/2	96.7	13.7	73.1	502.4	4.47	4.24	1.053	

\*Omitted from average.

### STEAMSHIP PRESIDENT VAN BUREN

19 0 1/4	108.5	15.2	104.3	649.5	3.51	3.40	1.032	Fair
19 5 1/4	102.9	13.36	94.2	658.1	3.41	4.65	0.733	Stormy
19 7 1/4	107.3	14.57	103.3	661.7	3.39	3.77	0.900	Fair
19 8 1/4	106.5	14.53	102.0	655.2	3.42	3.78	0.905	Moderate
19 10 1/2	107.4	14.83	100.7	633.8	3.53	3.60	0.982	Good
20 9 1/2	105.9	14.94	97.6	610.9	3.68	3.51	1.048	Moderate
22 7	107.5	15.2	101.5	660.1	3.40	3.31	1.028	
22 7 1/4	107.4	15.2	107.5	660.1	3.40	3.31	1.028	Fair with mod. sea
25 9	108.4	15.12	103.5	638.9	3.51	3.22	1.090	
28 7 1/2	101.6	13.72	98.0	666.7	3.36	3.89	0.863	Variable
21 9 3/4	106.3	14.67	101.86	648.6	3.46	3.60	96.09	

### STEAMSHIP PRESIDENT GARFIELD

19 7 1/4	103.3	14.44	93.4	605.4	3.70	3.83	0.965	Moderate
20 1 1/4	101.9	14.5	96.2	619.3	3.62	3.77	0.960	
20 5	101.1	14.63	98.8	630.9	3.55	3.70	0.960	
23 2 1/2	102.4	14.40	104.0	674.1	3.33	3.74	0.890	
27 2	103.0	14.55	109.5	702.5	3.19	3.44	0.928	
28 9	98.4	14.50	100.3	645.6	3.47	3.39	1.023	
23 2 1/2	101.6	14.5	100.4	646.3	3.48	3.54	0.955	

### STEAMSHIP PRESIDENT ADAMS

18 7 1/2	106.3	13.6	97.5	609.2	3.35	4.46	0.751	Moderate
18 9	108.1	14.85	96.7	607.8	3.69	3.60	1.026	Moderate
19 0	105.7	14.10	90.4	598.4	3.75	4.07	0.921	Moderate
19 6	105.7	14.60	93.12	595.3	3.76	3.74	1.005	Fair 2 da. mod. 6 da.
20 6	100.8	13.60	91.8	659.1	3.40	4.90	0.694	Rough
21 0 1/4	105.0	14.70	101.5	644.5	3.48	3.63	0.958	Light sea
24 3	104.8	14.5	113.2	728.7	3.08	3.63	0.848	Fair
25 2 1/2	103.0	14.5	99.0	637.3	3.52	3.51	1.002	Rough
26 11	105.3	14.7	97.0	615.9	3.64	3.38	1.078	
27 8 1/4	104.3	14.5	95.76	616.4	3.64	3.45	1.055	
22 1 1/4	104.9	14.26	97.6	637.26	3.53	3.67	0.9339	

### STEAMSHIP PRESIDENT HARRISON

19 10	87.9	12.5	55.3	413.0	5.43	5.39	1.008	Smooth
23 9 1/4	92.4	13.0	73.3	576.3	4.25	4.78	0.892	Mod. winds & swells
22 5 1/4	97.1	13.5	83.2	575.2	3.90	4.41	0.884	Lt. winds and sea
23 2	99.7	13.75	81.0	549.8	4.07	4.18	0.974	Smooth
22 3	97.8	13.15	79.5	564.1	3.97	4.70	0.844	Choppy and rough
21 4	96.8	13.20	71.8	507.7	4.42	4.68	0.944	Light winds abeam
23 0 1/4	93.9	12.95	67.1	483.6	4.44	4.84	0.918	Moderate
22 7 1/2	95.0	13.25	70.1	493.8	4.55	4.60	0.990	Smooth
25 3	94.1	13.01	78.7	564.6	3.97	4.68	0.849	Fair
26 6 1/2	98.0	12.75	77.2	565.2	3.97	4.85	0.818	Moderate
26 2 1/4	98.3	12.83	80.5	585.6	3.83	4.75	0.807	Moderate
23 3 3/4	95.5	13.08	74.3	529.3	4.25	4.79	0.9025	

### STEAMSHIP PRESIDENT MONROE

19 0 1/2	101.8	14.01	103.5	689.5	3.25	4.15	0.784	Moderate
19 3 1/4	87.8	10.34	86.0	776.2	2.99	8.35	0.358*	Rough
19 5 1/2	100.4	13.6	98.5	675.9	3.25	4.44	0.733	Heavy hd. wind & sea
19 5 3/4	97.3	12.4	83.2	626.2	3.58	5.50	0.652	Rough engine racing
19 6 1/4	105.6	14.36	109.5	711.8	3.15	3.92	0.804	Mod. wind and sea
19 10	98.5	13.8	113.3	766.1	2.93	4.28	0.685	
19 11 1/4	97.45	13.2	87.2	616.6	3.64	4.74	0.768	Moderate to rough
20 4	104.1	14.6	102.5	655.3	3.42	3.72	0.920	
20 4 1/2	101.0	13.69	99.0	675.0	3.32	4.34	0.765	
20 5 1/2	100.8	14.0	90.5	603.4	3.72	4.12	0.903	Moderate
20 11 1/2	105.0	14.34	108.5	706.2	3.18	3.68	0.824	
22 5	100.8	14.2	108.6	713.8	3.14	3.91	0.804	Moderate
22 9 1/2	104.9	14.7	98.0	622.3	3.60	3.58	1.005	Moderate to rough
28 1 1/2	94.9	13.08	97.03	692.5	3.24	4.42	0.733	
20 11 1/4	100.96	13.80	99.95	673.43	3.34	4.14	0.806	

\*Omitted from average.

22 7 1/2	100.8	13.9	89.6	600.9	3.74	4.06	0.921	
				Grand Average				

feet. These curves are based on the effective horsepower curves from model experiments, by determination of the indicated horsepower at various speeds and drafts with corrections for average weather, deep sea and average bottom conditions; with fuel consumption corresponding, using a variable amount per horsepower indicated depending upon the percentage of auxiliary load to main engine power; varying water rate of main engine at different powers developed and variation of evaporation factor as affected by the boiler power developed. The accompanying curves show the standards developed for the 502-foot passenger and freight vessels of the PRESIDENT POLK class.

### Actual vs. Standard Performance

Having these standard curves and also having more or less complete data on the actual performance of seven vessels of this class, an interesting comparison is possible. The accompanying tables show the actual voyage performance and also the estimated performance from the standard curves. On the basis of the standard curves representing 100 per cent performance, the average performance for all seven ships was found to be 92 per cent, while the best performance was 105 per cent and the poorest 80.6 per cent. The standard curves are applicable for average deep sea and average weather conditions. Under ideal conditions of smooth sea a plus correction must be applied and, with heavy seas, a minus correction. These curves do not represent maximum efficiency for vessels of this class; rather they give a practical performance standard which all these vessels may attain without material modification in equipment.

The variation in efficiency may be laid to losses due to conditions of furnace fittings, steam and water ends of auxiliaries, condition of main engine pistons and cylinders, condition of packing and methods of operation, all of which can and must be corrected. The standards shown on the curves will check the results obtained in the attempts to overcome these losses.

This is the first class of vessels for which these standards have been established by the fuel conservation committee and represents although only the beginning of a large task, a step along the right road to saving in fuel, the most important single item of expense in the operation of the merchant marine.

The principal characteristics of the 502-foot class are:

Length bet. perps., feet	502
Breadth, feet	62
Depth, feet	42
Draft loaded, ft., in.	32 3
Deadweight tonnage	13,000



Speed, knots ..... 14.5  
Engines, two 4-cylinder triple expansion, I. H. P. .... 7000  
Propellers ..... 2  
Boilers, Scotch marine ..... 6  
Heating surface, sq. ft. .... 2565  
Built by New York Shipbuilding Corp., Camden, N. J.

## Soo Canal Report

Shipments through the Soo canal in November were the second highest of any corresponding month during the last seven years. The total movement was 9,468,019 net tons. Last year, in the same month, shipments were only 3,265,479 net tons so that this year's figure was approximately 300 per cent higher. The November total this year compares with a movement of 11,232,668 net tons in October. The November shipments year<sup>2</sup> ly since 1915 are as follows:

	Net tons
November, 1922.....	9,468,019
November, 1921.....	3,265,479
November, 1920.....	9,419,580
November, 1919.....	5,134,496
November, 1918.....	8,513,511
November, 1917.....	11,153,808
November, 1916.....	8,751,336

As usual, the bulk of the shipments were handled through the American canal, the figure being 9,270,620 net tons while 197,399 net tons went through the Canadian canal.

The marked improvement in freight movement on the Great Lakes is reflected by a comparison of the total traffic through the Soo canal up to Dec. 1. This aggregates 64,229,558 net tons against 47,228,074 net tons in the corresponding period of last year. Iron ore has accounted for the bulk of this increase although grain shipments have been much heavier. As an offset the movement of coal shows a decrease due to the stoppage of shipments during the coal strike. Details for the seasons of 1922 and 1921 up to Dec. 1 are as follows:

### EASTBOUND

	To Dec. 1, 1922	To Dec. 1, 1921
Lumber, M. ft. B. M. ....	211,516	205,547
Flour, barrels ..... 8,721,813	9,693,275	
Wheat, bushels ..... 242,548,312	172,921,158	
Grain, bushels ..... 108,739,584	89,389,174	
Copper, net tons ..... 57,941	29,560	
Iron ore, net tons ..... 42,145,774	22,585,503	
Pig iron, net tons ..... 21,834	526	
Stone, net tons ..... 28,025	24,910	
Gen'l merchandise, net tons	294,594	91,112
Passengers, number ....	29,420	33,012

### WESTBOUND

Coal, soft, net tons.....	8,414,521	12,454,037
Coal, hard, net tons.....	573,447	2,225,228
Iron ore, net tons.....	70,700	9,820
Mfg. iron and steel, net tons.....	46,326	37,995
Salt, net tons.....	73,332	61,802
Oil, net tons.....	188,612	301,633
Stone, net tons.....	618,173	478,537
Gen'l merchandise, net tons	561,301	494,045
Passengers, number ....	29,590	33,605

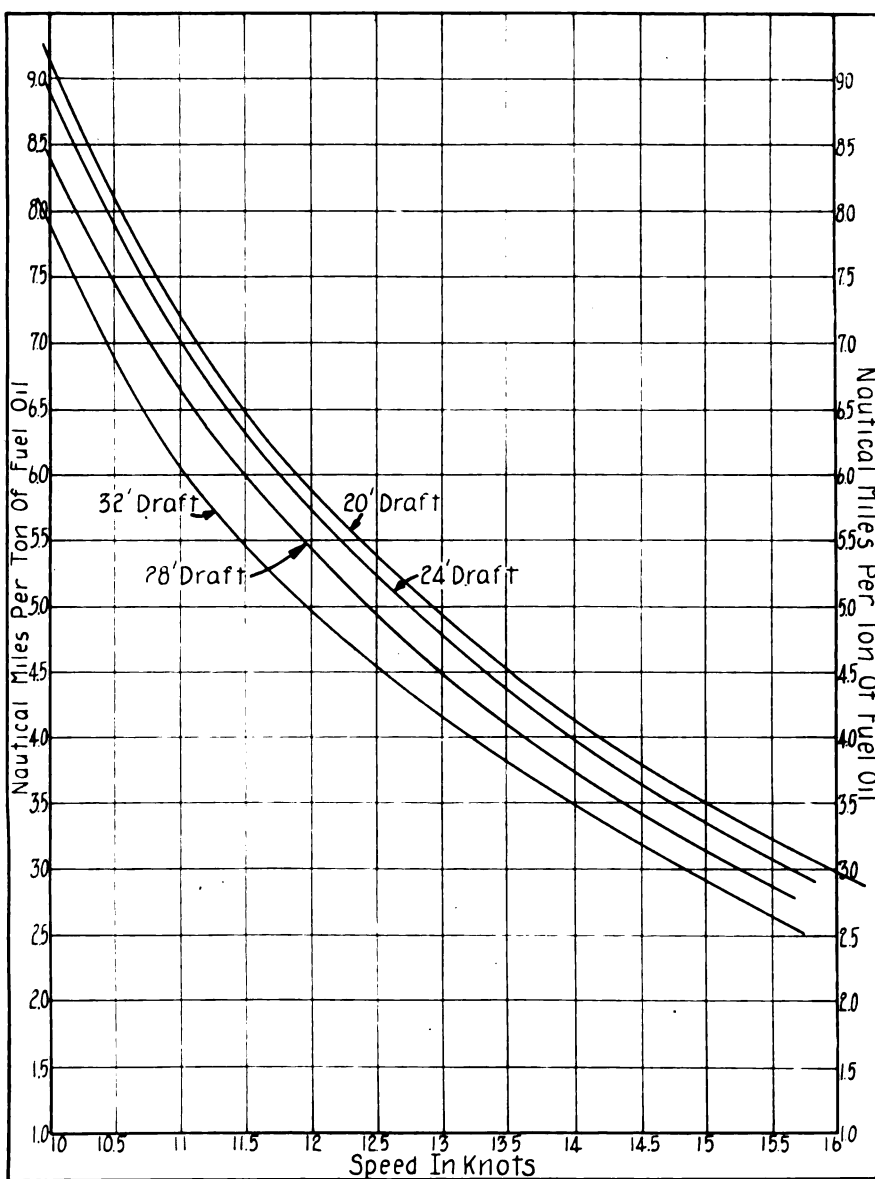
### SUMMARY

Vessel passages, number.	16,903	12,841
Registered tonnage, net..	51,491,055	31,453,824
Freight:		
Eastbound, net tons.....	53,683,146	31,174,977
Westbound, net tons....	10,546,412	16,053,097
Total freight, net tons...	64,229,558	47,228,074

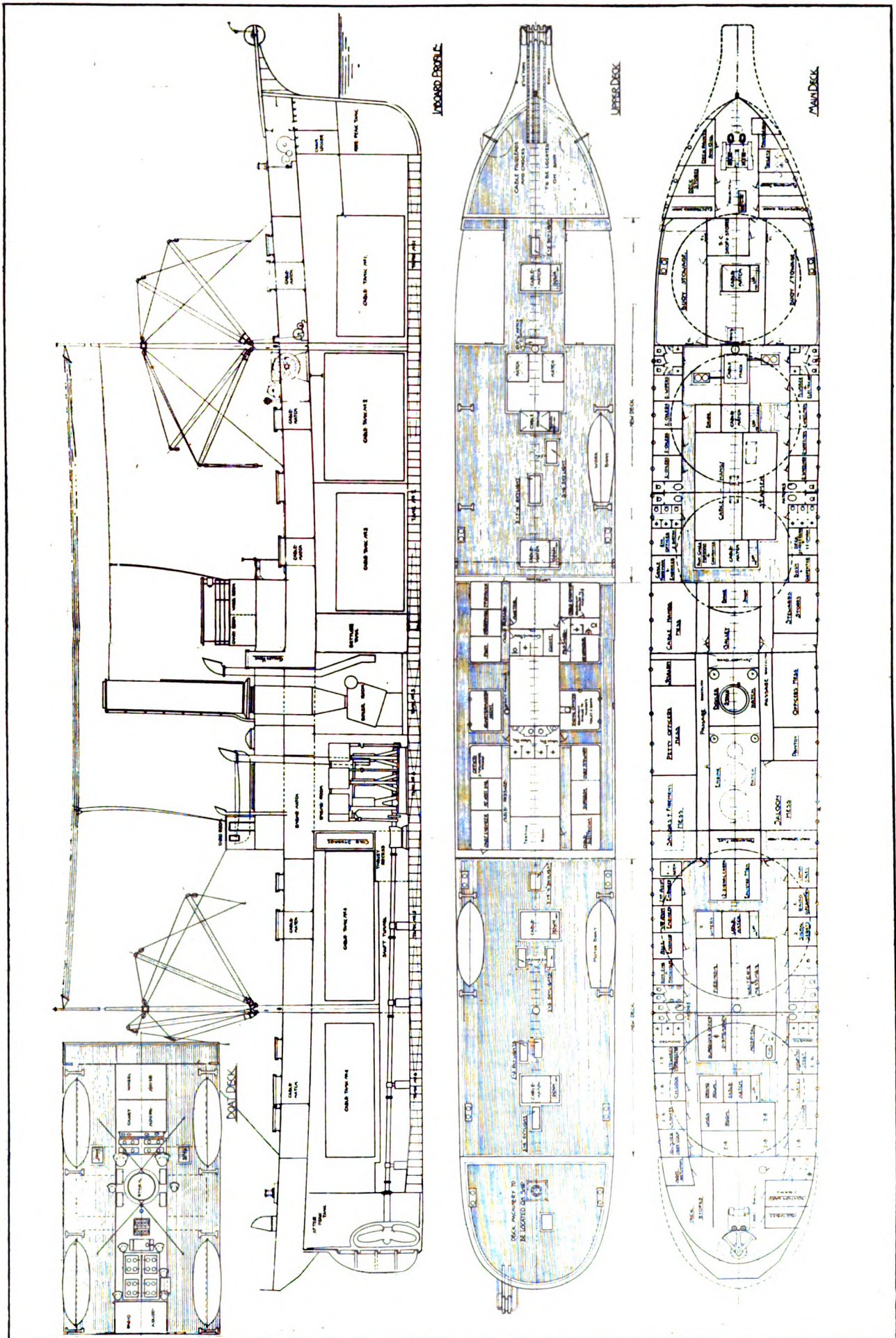
## Operating Performance of Seven Sister Ships

### STEAMSHIP PRESIDENT HAYES

Draft feet, inches	R.P.M.	Observed speed	Tons fuel per 24 hours	Pounds fuel per mile	Knots per Ton			Weather
					A Actual	B Theoretical	A/B Correction factor	
19 10	92.75	13.7	65.2	444.2	5.06	4.31	1.172	Smooth
23 4 3/4	95.7	12.8	90.0	656.2	3.42	4.89	0.701	Smooth
22 2 1/2	95.0	12.9	86.8	628.1	3.57	4.92	0.725	Smooth to moderate
20 8 1/2	97.25	13.4	97.2	677.7	3.31	4.56	0.756	Good
22 0	98.8	13.5	112.2	775.7	2.89	4.43	0.653	Moderate
23 2 1/2	91.5	12.9	75.8	548.5	4.09	4.88	0.839	Various
22 11 1/4	91.35	13.22	66.0	463.7	4.81	4.60	1.047	Moderate
22 4 1/2	93.05	13.0	75.5	542.1	4.14	4.82	0.859	Good
22 1 1/2	92.56	13.5	64.9	448.2	5.00	4.42	1.131	Smooth to moderate
21 10 3/4	97.25	13.7	79.0	538.2	4.16	4.28	0.973	Smooth to moderate
21 0	97.20	13.7	78.0	531.4	4.22	4.30	0.982	Smooth to moderate
25 11 1/2	91.86	12.97	70.0	503.0	4.45	4.68	0.957	Variable
26 6 1/2	97.7	13.5	86.6	598.7	3.79	4.22	0.899	Variable
25 4 1/2	101.1	13.86	86.4	581.8	3.85	3.98	0.967	Variable
24 2 1/2	93.7	12.9	75.0	542.6	4.13	4.71	0.878	Variable
24 8	93.1	13.33	74.6	522.3	4.29	4.33	0.992	Smooth
24 8 1/2	90.8	12.6	76.5	566.7	3.95	4.95	0.798	Mod. to rough sea
24 6 1/4	86.75	13.13	84.5	600.7	3.73	4.53	0.824	Variable
23 3 1/4	94.3	13.26	80.3	564.9	3.97	4.42	0.897	



CURVES SHOWING MILES PER TON OF FUEL AT DIFFERENT SPEEDS, WHICH IS POSSIBLE OF ATTAINMENT BY THE 502 FOOT SHIPPING BOARD LINERS. THESE RESULTS ARE ESTIMATED FROM MODEL BASIN EXPERIMENTS. COMPARISON WITH ACTUAL PERFORMANCES OF COMPLETED SHIPS UNDER SERVICE CONDITIONS ESTABLISH THIS CHART AS A STANDARD FOR THE CLASS



DRAWINGS SHOWING INBOARD PROFILE AND UPPER DECK, MAIN DECK AND BOAT DECK PLANS OF THE CABLE SHIP DELWOOD, A CONVERTED SHIPPING BOARD FREIGHTER. THE LOCATION AND AN IDEA OF THE SIZE OF THE CABLE TANKS MAY BE SEEN IN THE PROFILE AND MAIN DECK DRAWINGS



# Convert Freighter To Lay Cable

Signal Corps Adapts Shipping Board Steamer for Special Service in North Pacific Waters—Details of Equipment

BY ROBERT C. HILL

EQUIPPED for cable laying and cable repair work, the steel steamer DELLWOOD, transformed from a freighter, early in 1923 will be turned over to the Washington-Alaska military cable and telegraph system of the army signal corps. The DELLWOOD will be stationed at Seattle, succeeding the cable steamer BURNSIDE, which has made history in the annals of the signal corps.

Almost since the day during the Spanish-American war when she was captured by American naval vessels, the BURNSIDE has been identified with the signal corps and she has rendered valiant service. Built in Newcastle, England, in 1882 for a Spanish company, the BURNSIDE, constructed of iron, was operated as a freighter under the name of RITA. She was the second Spanish ship seized during the hostilities of 1898. Selected as a cable vessel she was altered and outfitted and soon sent to the Philippines. This vessel laid most of the government cable in the islands.

In the summer of 1903, the BURNSIDE was sent to Puget sound and ever since has been stationed in these waters. Most of her work has consisted of keeping the Alaska cable in repair. This is strenuous service even in summer but considering the heavy weather the BURNSIDE has encountered in many storms, the Spanish freighter aged rapidly. For 10 years she has been almost obsolete. In fact her days were so numbered that signal corps officials have hesitated to make extensive repairs and for years they have been asking for a new vessel. Although well equipped as to cable machinery and repair facilities, the BURNSIDE has long been unsuited to present requirements of the service.

After signal corps officials had made repeated requests for appropriations for a modern vessel to take the BURNSIDE's place, they were told to take their pick from the shipping board's surplus of steamers. In the fall of 1921, Capt. Henry Winter, cable engineer and known as an expert in his profession in which he has been engaged 25 years, selected the DELLWOOD as the best suited for cable work of the vessels available.

The DELLWOOD was built by the Hanlon Dry Dock & Shipbuilding Corp., Oakland, Cal., and completed in the fall of 1919. She is a steel steamer of the intermediate type with the following dimensions: Length, 320 feet 8 inches;

beam, 46 feet; and depth, 24 feet 5 inches. She measures: Gross, 3478; under deck, 2991; net, 2063; and deadweight, 5210 tons. In comparison the BURNSIDE registers 2194 tons gross and 1405 tons net and measures 285 feet 2 inches in length, 36 feet 8 inches beam and 26 feet deep.

In his selection Captain Winter made careful survey of a number of hulls. He required a vessel of certain size, one without 'tween decks, and a hull that would readily adapt itself to such structural and other alterations and changes necessary to remodel a freight carrier into a modern cable ship. In the DELLWOOD it is believed that all the necessary requirements have been met. When the DELLWOOD is turned over to the signal corps by the Todd Dry Docks, Inc., Seattle, where the alterations are being made from carefully drawn plans, the BURNSIDE will have a worthy successor. The plans were prepared by Capt. Winter, who from long experience, is thoroughly familiar with the requirements demanded of a cable vessel and especially one intended for service in Alaskan and North Pacific waters.

Prior to being turned over to the war department, the DELLWOOD for nearly two years had been engaged in general freight service between Hawaiian ports, San Francisco and Puget sound. She is of the open hold type with two cargo holds and a deep tank forward and two cargo holds aft.

## Extensive Changes Made

The first work of conversion was the installation of five cable tanks. These were placed in the four holds and the deep tank. The contract was awarded to the Commercial Boiler Works, Seattle, on a bid of \$60,000. This company is equipped for work of this nature. The contract was completed and the vessel accepted in March, 1922.

Last June appropriations became available for altering the superstructure to make the vessel suitable for cable operations. Several major structural hull changes were necessary and after mature consideration the plans, shown in the accompanying illustration, were adopted. Todd Dry Docks, Inc., obtained the contract on a bid of \$203,000. The work has proceeded with dispatch, under the supervision of Captain Winter and J. Albert Pedro, structural steel engineer of the general office of the quartermaster

department, who was sent out from Washington to represent the department. It is expected the DELLWOOD will be ready for cable service sometime in January.

Changes in the hull included building the bow forward a distance of 20 feet for the installation of three cable sheaves and building up the forward and after wells into a flush deck. The contract also called for the transfer of the cable machinery and cable gear from the BURNSIDE, installing a new steering engine connected directly to the rudder stock and the placing of independent air pump, feed pumps and other auxiliaries in the engine room. Originally the DELLWOOD's steering engine was placed on a platform in the after end of the engine room and the rudder was controlled by chain from the steering engine. The new arrangement will safeguard the steering and increase the vessel's dependability in heavy weather.

Although an oil burner, the DELLWOOD was originally equipped with auxiliary wing coal bunkers at the sides of the settling tank. These bunkers have been converted to carry fuel oil. Her double bottoms consist of six tanks. The fore-peak tank and Nos. 1 and 2 double bottoms have been prepared for carrying water while Nos. 3, 4, 5 and 6 tanks will be utilized for fuel oil. This will insure a steaming radius of about 25 days. It is estimated that maximum speed with full load will be about 8½ knots an hour. The vessel is single screw, equipped with triple expansion engines, manufactured by the Allis Chalmers Mfg. Co., Milwaukee, with cylinders 24 x 39 x 65-inch bore and 42-inch stroke. Three water tube boilers furnish steam.

The accompanying plans show the general arrangements when the DELLWOOD is ready for service. Attention is directed to the location and plan of the messrooms which are centrally arranged around the engine room hatch with galley directly amidships and just forward of the engine room bulkhead. For normal repair operations the crew will comprise 84 men to handle ship and 24 for signal corps work. Most of the rooms provide for only two persons each. The location of living quarters and the interior plans have provided the utmost in comfort and convenience for both officers and crew. Every effort has been made to give saloon, messroom and cabins

the appearance and atmosphere of the best quarters ashore.

In the five cable tanks it will be possible to stow a maximum of 2000 miles of the deep sea type of cable. Cable capacity is an important matter in ships of this kind. In this respect the *DELLWOOD* is said to more than fill the requirements. Roughly, the dimensions of the cable tanks are:

Tank No.	Location	Diameter		Depth Feet
		Feet	Inches	
1	Forward	31	4	17
2	Forward	32	8	21
3	Forward	34	7	18
4	Aft	39	0	13
5	Aft	35	0	13

The capacity of the *DELLWOOD* will be approximately four times that of the *BURNSIDE* whose tanks had room for less than 500 miles of cable.

The remodeled cable ship will be equipped with a Sperry gyroscope compass installation and as funds become available it is expected to install a high intensity searchlight of not less than 30,000,000 beam candlepower as well as a first class radio compass. Strong searchlights are an essential equipment on cable vessels as night work is frequently necessary.

In the galley, the equipment will be first class, with oil burning range and bake oven, the Jarvis feed system being adopted. The fittings will all be metal with the most complete equipment available. Subcontract for the galley was awarded to the B. B. Buell Co., Seattle, specializing in galley equipment. Refrigerator capacity for a crew of 150 men for about six weeks will be provided. Officers' mess and the saloon will be finished in hardwood paneling while

the other messes will be done in soft woods.

On account of the extensive changes in the engine room, it has been necessary to practically repipe the entire ship. The electric installation has also been worked over completely. The original pilot and wheelbase was wood. This has been replaced by a steel structure adding to the stability of the upper works.

The equipment will include a modern cable pay-out machine for laying cable over the stern. While designed especially for Alaska operations, the *DELLWOOD* is so equipped that she will be able to handle cable work in any ocean.

To have constructed a new vessel, designed for cable work and equipped with every modern facility, would have cost approximately \$2,000,000 at present prices. For a fraction of this sum the *DELLWOOD* is being turned over to the signal corps. The outlay on this vessel for conversion to cable service will approximate less than \$300,000. Two criticisms of the *DELLWOOD* from a cable expert's viewpoint are her slow speed and the fact that she is single screw. Double screw types are preferred for this class of work as it facilitates steering especially during cable work when quick changes of course are often imperative. However, all conditions considered, the *DELLWOOD* is regarded as a vast improvement over the obsolete *BURNSIDE* and signal corps officers believe she will serve them well for many years.

Some equipment, generally deemed absolutely necessary in vessels of this class, has not been provided for the *DELLWOOD*. One is a smoke or fire detector. It is generally known that deep sea cable

is sensitive to heat and deteriorates rapidly under certain conditions. This emphasizes the need of watching the temperature in the cable tanks, all modern cable vessels being equipped with apparatus which will give warning of abnormal heat. Neither has provision been made for an instrument by which the depth of water is determined by sound. The need of determining depths in cable work is obvious. However, it is understood that economy has been given due consideration in remodeling the *DELLWOOD* and in time the corps may have sufficient funds to provide the vessel with every modern device.

That other maritime nations are not unmindful of the need of modern cable ships is evidenced by the fact that Great Britain has always maintained a fleet of up to date cable vessels. In the Pacific at present are stationed two vessels of this class under British registry. The *RESTORER* operates out of Victoria, B. C., and the *IRIS* is stationed in New Zealand. Recently it was announced that a British firm has decided to retire the cable laying steamer *FARADAY*, built in 1874. This vessel has laid about 50,000 miles of cable, including eight Atlantic lines. She will be replaced by a new steel steamer, modern in every respect, with four cable tanks holding 4350 tons of cable and with a steaming radius of 10,000 miles. Japan has recently completed a large and modern cable laying ship, the third vessel of this class under the Nipponese flag.

Col. J. D. L. Hartman, in charge of the Washington-Alaska cable and telegraph system, with headquarters at Seattle, will have supervision over the *DELLWOOD* as he has at present over the *BURNSIDE*.

## Rebuild Cruisers as Airplane Carriers

**A**WARE of the importance of the airplane as an element in naval warfare, the United States navy is converting into airplane carriers two of the new battle cruiser class scrapped for their original purpose by agreement of the conference on the limitation of armament. One originally designed and laid down as the battle cruiser *SARATOGA*, is building at the New York Shipbuilding Corp., Camden, N. J. The other, originally the battle cruiser *LEXINGTON*, is building at the Fore River plant of the Bethlehem Shipbuilding Corp., Quincy, Mass. These vessels as airplane carriers are expected to be launched early in the summer of 1924.

At this time a long period before their earliest possible completion, it is of interest to note, entirely aside from their efficiency as a fighting arm, some

of the proportions of their hulls and of their electric propelling equipment, as a practical example of an original and far reaching advance in naval architecture and engineering. A few of the general particulars are as follows:

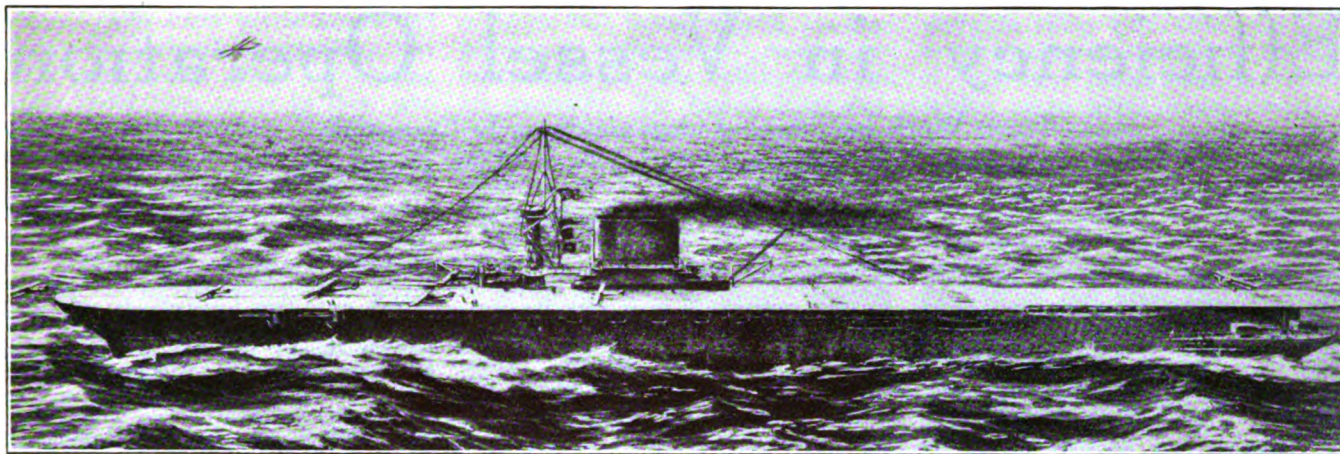
Length on L. W. L., feet	850
Beam, feet	105
Displacement, tons	33,000
Shaft horsepower 4 screws	180,000
Boilers, oil fired	16
Speed estimated, knots	33

The hulls have been designed to give a minimum of resistance. Several models were so designed, built and towed at the experimental model basin in Washington to determine definitely the best set of lines, and to establish the necessary shaft horsepower to drive the ship at the required speed. The decks of

these ships will look like miniature aviation fields as every bit of superstructure not absolutely essential will be eliminated to give clear space.

For propelling power, the steam turbine electric drive as designed and built by the General Electric Co., Schenectady, N. Y., under the direction of Rear Admiral J. K. Robinson, chief of the bureau of steam engineering, has been adopted, based on the successful operation of this type of power in battleships. Four separate propeller shafts are provided each with 45,000 shaft horsepower. The propelling plant will consist of four steam turbine generating sets, operated by steam from 16 oil fired boilers, having a rating of 40,000 kilovolt amperes, 5000 volts, 3 phase, 1770 revolutions per minute. The generators will supply current to eight electric motors,





ONE OF THE PROPOSED AIRPLANE CARRIERS, NOW BEING BUILT FROM THE PLANS OF A SCRAPPED BATTLECRUISER, AS CONCEIVED BY AN ARTIST. NOTE THE LOCATION OF FUNNEL AND RIGGING, TO GIVE PLANES A FULL SWEEP THE LENGTH OF THE VESSEL

two to each propeller shaft. Each separate motor will develop 22,500 shaft horsepower at 318 revolutions per minute. Total weight of the propelling machinery is estimated at 2100 tons.

In addition to the propelling machinery, each vessel will be provided with six 750-kilowatt direct current turbine generator sets furnishing electrical current for all purposes exclusive of main drive. The steering gear, anchor windlass and ventilation fans will be electrically driven.

A unique surface cooling system of ventilation for the electrical machinery will be adopted. This system, also called the radiator method, was developed by the engineers of the General Electric Co. and in principle is the reverse of the radiator method in use by motor car manufacturers. The heat created by the generators is absorbed from the air by means of water in cooler tubes and the water pumped overboard. The air is returned to the electrical apparatus where it is again heated, then cooled again and returned, this succession continuing indefinitely.

The electrical equipment on these vessels is of unprecedented size and capacity but in the light of the experience of the past two years with electric drive in the latest battleships, entirely successful operation is fully anticipated.

## Expect More Shipbuilding During 1923

Turn of the year is expected to see increased activity in shipbuilding. Inquiries pending include some attractive vessels and others on the boards but not yet up for formal figures involve ships of considerable proportions. Work actually booked by yards in the past month totaled only 11 vessels, two of which are to be steamers over 300 feet long. The others range from a collier down to a fireboat and several barges. New

inquiry appearing in the month calls for 17 vessels, 16 of which are army engineer barges and the other a cable-laying steamer.

Employment in shipyards continued to gain in October, according to the United States employment statistics. Eighteen plants in October reported 15,602 workmen employed, compared with 15,340 in September. The weekly payroll for these yards averaged \$381,542 in October as against \$378,208 in September.

The month's business was as follows:

### SHIP CONTRACTS PLACED

Consolidated Fuel Co., collier 110 feet long, 35 feet beam and 6 feet 10 inches draft, equipped with 90-foot tower capable of loading coal 200 tons an hour, to Johnson Iron Works, Dry Dock & Shipbuilding Co., New Orleans.  
Hudson River Day line, paddle wheel steamer, 338 feet long, 76 feet wide and 13 feet 8 inches depth molded to main deck, equipped with diagonally inclined triple expansion steam engine with two single ended and two double ended Scotch boilers, oil fuel, to Bethlehem Shipbuilding Corp.; to cost \$750,000.  
City of Norfolk, Va., fireboat to cost \$40,000, to Norfolk Shipbuilding & Dry Dock Co., Norfolk, Va.  
Huron Transportation Co., Detroit, cement carrier, 350 feet long, 55 feet beam and 28 feet deep, triple expansion engine with two Scotch boilers, to be delivered July, 1923, to Toledo Shipbuilding Co., Toledo, O.  
Philadelphia & Reading railroad, two ferryboats, to Pusey & Jones Co.  
Tidewater Oil Co., three barges, each 162 x 26 x 5 feet, to Sun Shipbuilding Co.  
Standard Transportation Co., two barges, to Sun Shipbuilding Co.

### SHIP CONTRACTS PENDING

United States engineer, Pittsburgh, three barges, Independent Bridge Co., Pittsburgh, low bidder.  
United States engineer, Pittsburgh, steel-hulled derrick boat, Midland Barge Co. low bidder.  
United States engineer, Memphis, seven steel barges and power equipment, bids in.  
United States engineer, Vicksburg, Miss., nine steel barges; bids in.  
Western Union Telegraph Co., cable laying vessel, 211 feet long, molded breadth 34 feet and molded depth to upper deck, 18 feet 6 inches, twin screw, diesel electric drive, bids in.

## Receive Bids for Pacific Coast Ferryboat

Bids for a steel automobile ferry to be built for service between the mainland and Vancouver island have been received by Canadian Pacific railroad officials and forwarded to headquarters at Montreal. The contract will be awarded soon. The vessel will cost about \$250,000. Diesel power will probably be adopted.

The first launching of a wooden hull in many months took place at the Peninsula Shipbuilding Co.'s plant, Portland, Oreg., in November when the steamer DAISY GRAY was sent into the water. The vessel is of the steam schooner type adapted for lumber freighting and general coastwise service. Engines will be installed at San Francisco. The DAISY GRAY is 225 feet by 43 feet 7 inches by 15 feet 7 inches. She will have a 750 horsepower triple expansion engine and two Babcock & Wilcox boilers. Her lumber capacity will be 1,300,000 feet. The steamer was built for the Freeman Steamship Co.

Several of the wooden shipbuilding and repair yards in the vicinity of Seattle are enjoying some activity this winter. This consists mostly of overhaul and repairs to the motor fleet of fishing vessels. The Ballard marine railway has increased its force from 40 to 80 men and other plants report increased work.

A fair amount of general repair and overhaul work is under way at the Seattle plant of Todd Dry Docks, Inc. The shipping board vessels PRESIDENT GRANT, PRESIDENT JEFFERSON and WEST CAHOKIA recently were docked for cleaning and painting. On the plant's enlarged drydock, the 535's of the shipping board are easily handled. The same yard is repairing a broken rudder for the freighter STUART DOLLAR. The Alaska steamer JEFFERSON has had a new tail shaft installed.



# Efficiency in Vessel Operation

Team Work in Shipping Organizations Is Essential—  
Master of Ship Should Be Given More Authority

BY CAPT. DANIEL A. J. SULLIVAN

SINCE the inception of transporting freight by means of water routes until the present time, one important question has caused more worry and deep study than any other, and that is the cost of operation. In the study of this subject, one is impressed with the importance of every detail which added together makes the whole, so that in delving into the records of the past, those of us who are now striving to produce efficiency realize the necessity that each and every member of the profession should understand that his efforts and his labor are a part of the whole, and if the results of his labor are not up to the mark, then the whole will be handicapped by just that amount. So in the efficient operation of any ship, every person who has had a part in designing, in building and then in operating that ship is responsible for his part, and if each and every one has produced perfect results then the result as a whole should be perfect.

In theory this is true, but in practice we find too many "exceptional conditions," which expression has been used to cover a multitude of blunders in the past as well as in the present. So in the study of this subject we must admit to ourselves that each of us is responsible for the results attained, and that on the blunders of the past we can erect a perfect organization for successful operation.

## Operators Need Subsidy

The history of shipping reveals many interesting events, and without spending too much time on the past, it is well to recall that supremacy of the seas has gradually changed from nation to nation since the beginning of water transportation until the present, and will continue to be fought out on economic lines until the end of time. In studying the cause of the gain or loss of the supremacy of the seas, it appears to be true that the nation which can build ships for less than others, and whose vessels can transport cargoes faster and cheaper than others, will rule the sea. Here again enters the "exceptional condition" in the form of government ownership and of government subsidy.

At the time of writing this article, an effort is being made to place the mer-

chant marine of the United States on an equal competitive basis with the merchant marine of other nations by the adoption of a ship subsidy. Those interested in the success of vessels under the American flag realize the necessity of this measure.

First, on account of the higher first cost of the vessels built in the United States.

Second, the American merchant marine is the only important American industry not protected by tariff.

Third, to equalize the present unfair competition on account of the subsidy paid to the merchant marine by other nations in competition with the merchant marine of the United States.

Fourth, on account of protection to other industries the standard of living of its employes is raised to a much higher level than the standard of living in any other country and it is unfair to the seafaring profession to force them to a standard of living which would not be tolerated ashore.

## Our Heritage of Seamanship

Many critics of American shipping insist that Americans can not operate ships. These gentlemen forget the records of the past, the most interesting of which is the era of the clipper ship, which era commences prior to the war of the Revolution and continues until just after the Civil war, when the era of steam vessels begins. The years between 1843 to 1869 are to all Americans who love the sea the most interesting, as during this time American shipbuilders constructed the finest models of sailing ships ever launched. With these ships the American shipmaster proved himself superior to any shipmaster in the world, and it is a matter of record how American clippers were loading in China ports at higher freight rates while vessels of other nations could not get cargoes in the same port at lower freight rates, owing to the difference of speed. Here it may be well to quote from *The Clipper Ship Era*, by Capt. Arthur H. Clark, published in 1910:

Of the men who commanded the American clipper ships, it may be said that they carried the ensign of the United States to every quarter of the globe, with honor to their country and themselves. Each had his strongly marked individual traits of character and his human weaknesses. Nothing could be more remote from the truth than to imagine these men as blustering bullies

at sea or rollicking shellbacks on shore; neither were they Chesterfields or Carpet Knights, afloat or ashore, nor at all the type of skipper that one is apt to meet in works of fiction. Many of them might easily have been mistaken for prosperous merchants or professional men, until a more intimate acquaintance disclosed the aura of salted winds and surging seas, and a world wide knowledge of men and cities. It may well be doubted whether braver, true-hearted gentlemen or finer seamen than many of the American clipper ship captains of half a century ago have ever sailed the seas.

When these men won the supremacy of merchant shipping for American vessels it was said of them in 1860 by a critic of the merchant marine of another nation: "We have no masters who can match the masters of American vessels, and until we do, and allow them full control of our vessels, we can not compete successfully." Even in those early days it was thoroughly understood that the success or failure of the venture was solely in the hands of the master.

Succeeding the era of clipper ships is the era of steam, and as other nations built and operated steamships the American ensign gradually faded from the sea, and the year 1913 saw American shipping at its lowest mark.

The world war commenced in 1914 and naturally the demand for tonnage grew, and as the demand increased the rates soared. Since everything connected with the shipping interest follows closely the law of supply and demand, the operating cost during the war period attained such heights as to be unbelievable. During this period of inflated prices, as a defensive measure, American had constructed a large number of vessels, and when peace was declared America found herself in possession of one of the greatest merchant fleets the world had ever dreamed of. It then became a problem how to make the best use of this fleet.

## Efficiency is Now Necessary

It is useless to attempt to conceal the fact that at this time there existed many steamship companies, whose organizers and officials knew little about the shipping business and less about the traditions and established customs of the sea. Wages soared, conditions afloat and ashore became impossible, operating costs were excessive, claims for cargo damage and loss were unreasonably high, and with the perfection of systems of com-



munication the status of the master and officers was reduced to practically that of a high priced office boy—obeying orders issued from ashore by those who were intoxicated by high freight rates and large profits, who thought more of the American dollar than they did of the safety of the vessel or its mark. However, as freight rates decreased, it was realized that steamship companies founded on inexperience could not endure, and it is to the credit of the profession to say that ability, experience, and efficiency are being recognized and will eventually regain control.

During the past two years, rates have fallen to the level of, and in some instances to a point lower than, prewar rates, and in the struggle of American vessels for existence in the shipping world against the bitter competition of foreign vessels which enjoy a lower operating cost, as well as a government subsidy, American shipping has reached that stage where the cost of efficient operation means success or failure to our merchant marine as a whole.

It is a fact that, among the various grades of ship officers, the American merchant marine can boast of having many who are efficient, but unfortunately many masters lack sufficient business training, due to the modern method in steamship offices where the master is not allowed to handle details with which he should be familiar, and naturally in this connection the shipowner is standing in his own light.

To establish a basis of comparison of the cost of operation for all classes of ships is an impossibility, and after considering the mass of data available it was decided that each vessel was an individual study.

Herewith are presented data of three vessels in transatlantic trade, reduced to an average of one voyage and all expenses are included; total cost represented as 100 per cent:

	Exam- ple A per cent	Exam- ple B per cent	Exam- ple C per cent
Fuel .....	23.6	29.9	27.9
Stevedoring, tally, watch- ing, clerks .....	20.6	16.0	22.9
Wages on ship .....	11.2	14.4	13.0
Insurance .....	10.4	8.1	12.0
Wharfage .....	7.7	1.9	2.2
Agency and brokerage....	4.9	3.4	2.7
Grain fittings .....	3.1	2.9	...
Food for crew .....	3.0	3.0	1.4
Stores deck department..	2.0	2.9	2.9
Stores engine department.	2.5	3.4	3.6
Stores steward department	0.2	0.3	0.25
Advertising .....	2.4	0.4	0.3
Towboats .....	1.8	1.5	1.4
Pilotage .....	1.3	1.3	1.4
Port charges .....	1.4	1.8	1.6
Repairs .....	1.6	5.1	3.6
Miscellaneous .....	2.1	3.5	2.6
Laundry .....	0.2	0.2	0.25
<b>Total .....</b>	<b>100</b>	<b>100</b>	<b>100</b>

From a study of the above data one readily sees that fuel, cost of handling cargo, wages and insurance are the most important items of expense.

Fuel is the most important item of expense in operation and is a subject

to which little intelligent study has been given, and while general results have been compared, little satisfactory data are obtainable. The United States shipping board has just appointed a committee to study this subject; this committee is afforded a great opportunity to render service to the profession.

The prevailing practice today is to buy fuel on a price basis, and no consideration is given to the heat units contained therein nor to the subsequent results obtained.

In vessels using oil fuel, where this fuel is carried in double bottoms, suffi-

where the money goes. This item alone, on an average, is one-fifth to one-sixth of the total expense and is seldom checked as to delays, waiting, overtime, etc. With proper supervision, even with the high rates of pay, this excessive rate per ton could be greatly reduced.

Third in importance in operating cost of a vessel are wages afloat. So much unreliable data have been printed about this subject that great care was exercised to obtain only authentic data, and the rates of pay on American vessels given in the accompanying table were taken from shipping articles which are

### Ship Wage Scale Effective on July 1, 1922

	Ship- ping board association scale	American S.S. Owners scale	Private owned American scale	Actually paid	British £	\$4.40	German Marks 400 to \$	Danish 1 krone 21 1/2 c	Swedish 1 krona 25 1/2 c
Master .....	\$270.00	\$275.00	.....	.....	\$45	\$198.00	6000	\$15.00	.....
1st mate....	165.00	165.00	\$150.00	\$150.00	21-10	94.60	4200	10.50	750 \$161.25 600 \$153.00
2nd mate....	145.00	140.00	125.00	115.00	16	70.40	3800	9.50	625 134.38 420 107.10
3rd mate....	130.00	125.00	100.00	95.00	13	57.20	3425	8.55	450 96.75 380 96.90
Wireless ..	90.00	90.00	90.00	80.00	13-10	59.40	.....	.....	.....
Carpenter..	70.00	70.00	45.00	40.00	12-10	55.00	2750	6.90	345 74.18 300 76.50
Boatswain..	65.00	.....	45.00	40.00	11-10	50.60	2750	6.90	345 74.18 300 76.50
A. B. seaman	55.00	47.50	35.00	35.00	10	44.00	2600	6.50	316 67.94 275 70.13
Ordinary seaman....	40.00	35.00	25.00	30.00	5-10	24.20	1200	3.00	200 43.00 180 45.90
Chief engineer..	240.00	250.00	240.00	225.00	24-10	107.80	5500	13.75	1100 236.50 430 109.65
1st assistant engineer..	165.00	165.00	150.00	150.00	20-10	90.20	4200	10.50	850 182.75 400 102.00
2nd assistant engineer..	145.00	140.00	125.00	115.00	16	70.40	3800	9.50	650 139.75 350 89.25
3rd assistant engineer..	130.00	125.00	100.00	95.00	13	57.20	3425	8.55	575 123.63 285 72.68
Deck engineer..	70.00	70.00	45.00	.....	11-10	50.60	.....	.....	.....
Oiler .....	65.00	55.00	40.00	42.50	11	48.40	2750	6.90	450 96.75 290 73.95
Fireman (oil) .....	57.50	50.00	35.00	.....	.....	.....	.....	.....	.....
Fireman (coal) .....	.....	50.00	.....	40.00	10-10	46.20	2650	6.62	322 69.23 275 70.13
Wiper .....	50.00	35.00	25.00	.....	10	44.00	2400	6.00	215 46.23 180 45.90
Coalpasser..	.....	40.00	.....	35.00	.....	.....	.....	.....	.....
Steward .....	105.00	105.00	100.00	90.00	14-10	63.80	2600	6.50	530 113.95 350 89.25
Cook .....	90.00	90.00	80.00	75.00	13-10	59.40	2850	7.12	450 96.75 325 82.88
Baker .....	70.00	70.00	45.00	60.00	9-10	41.80	2440	6.10	230 49.45 180 45.90
Messman....	35.00	35.00	35.00	40.00	8-10	37.40	2440	6.10	90 19.35 80 20.40
Messboy ..	35.00	35.00	35.00	35.00	.....	.....	1525	3.81	.....

cient attention has not been given to the arrangements for heating the fuel in the tanks, with the result that in cold weather considerable loss occurs. However, many interested in efficiency feel that the shipping board fuel committee will submit data and promulgate a set of rules of procedure which, if followed, will greatly improve results.

Next in importance to fuel is the cost of handling cargo, which includes loading, checking, sorting, watching, and clerk hire on dock. Investigation revealed that the total actual cost per ton of general cargo handled in New York varied from \$1.15 a ton to \$1.65, and in the ports on the Atlantic coast the range in cost per ton was from \$0.92 to \$2.15. One interesting example is as follows:

Cargo handled, 152.4 tons general.	
Stevedoring .....	\$137
Cooperage .....	75
Watching .....	70
Sorting and delivering.....	284
<b>Total cost .....</b>	<b>\$566</b>
<b>Average cost, \$3.71 per ton.</b>	

One only need check up on a ship during the loading and discharging to realize

on file in the commissioner's office. The rates of pay on foreign vessels were obtained from vessels in service and shipowners.

The standard of living in this country is so different from that in foreign countries that it is absolutely unfair to compare American wages with those of foreign vessels. One of the most unfortunate lines of reasoning today is that by cutting wages one obtains efficiency. It matters not in what capacity a man is employed, if the wages for that rating are higher than the wages for the same ratings in other lines, then the most efficient man will be found for the place. The student may find in the scale of wages sufficient explanation as to why the native born American does not adopt the profession of the sea.

Much could be written about the subject of insurance—all classes—but it would not influence the prevailing opinion of those who should know the subject fairly well. Any discussion on this subject can be summed up by saying that when loss and damage are high the rate is high and when loss and damage are

low the rate is low. This cost could be reduced by bonus to ships' officers and self-insurance.

The remaining items which enter into the cost of operation are either unavoidable or under the supervision of the personnel afloat, and if care has been exercised to select only efficient officers it naturally follows that they will produce efficient results.

The question of subsistence, while not large in total cost, is most important in having satisfied personnel afloat, and sufficient care should be exercised to see that food is properly prepared and made appetizing instead of the all too common practice of serving improperly prepared and unpalatable food.

The shipping board has recently placed a limit on the cost of feeding of 65 cents per man per day. My experience is that this is a generous allowance, provided that it is judiciously expended.

In the matter of deck and engine stores it would be well to work out an annual schedule of allowances and requirements. In discussing this subject with one of the profession, I found that he had worked up data for a company covering its fleet of quite a number of vessels, and on an average the figures of cost allowance check closely for requirements. For example, a vessel of the 7500 to 9000 deadweight ton class was allowed:

	Per day
Deck department .....	\$17.30
Engine department .....	19.15
Steward sundries .....	5.25

In comparing these figures with those of actual operation, they were found to be rather generous, and it only confirms the opinion that in these departments, with a fixed schedule, the former excessive cost can be reduced to a minimum.

Taken as a whole, one is impressed with the manner in which shipping is handled since the days of the world war. While in many cases, too much misdirected energy exists, the members of the profession realize that the time has arrived to establish the American merchant marine on a clean, efficient business basis, and to regulate the operating cost so that it will be on a par with international competition.

From a study of the data available, the writer is of the opinion that American ships can be made efficient, and excepting the excessive first cost, depreciation and overhead expense, can hold their own against any competition. To accomplish this result, there should be closer relations between the executives of companies and the masters of their vessels. Masters should be elected for their efficiency and given absolute authority over the operation of their vessels. Chief engineers should be selected likewise and given absolute authority over their own department. The master should be

furnished with complete cost data so that he can remedy high cost over which he has control and show the owner the excessive cost over which he has no control.

Managers and marine superintendents should be men who have served as master of a vessel. Superintending engineers should be men who have served as chief engineer of a vessel. Everything concerning the handling and stowage of cargo should be subject to the approval of the master of the vessel. If the master is to be held responsible, he should be given full authority regarding all details.

### Launch Bethlehem Oreship with Releasing Gear

Another ore carrier will be added to the fleet of the Ore Steamship Co., subsidiary of the Bethlehem Steel Corp., when the *CHILORE* is delivered next April. She was launched late in November at the Alameda, Cal., yards of the Bethlehem Shipbuilding Corp., and is the largest merchant vessel ever built on the Pacific coast.

The *CHILORE* is 571 feet long and is designed to carry a cargo of 20,000 tons between the Bethlehem ore properties in Chile and Baltimore and other north Atlantic ports within easy access of the Bethlehem steelworks. She is a sister-ship of the *MARORE* and *BETHORE*, completed in 1922, and of the *LEBORE*, keel for which was laid on the ways just vacated by the *CHILORE*.

The vessel was launched with a hydraulic releasing gear, the first time this device has been used on the Pacific coast.

### Building Cement Carrier for Lake Trade

Contract has been taken by the Toledo Shipbuilding Co., Toledo, O., for constructing for delivery in July, 1923, of a steel, single screw self-unloading freight steamer for carrying bulk cement. The vessel is being built for the Huron Transportation Co., Detroit, a subsidiary of the Huron Portland Cement Co. The vessel will carry cement from the company's plant at Alpena, Mich. Complete the steamer will cost approximately \$700,000.

She will be 333 feet between perpendiculars, 350 feet over all, 55 feet beam and 28 feet deep. The ship will be equipped with a triple expansion engine with cylinders 21 x 35 x 59 inches and 42-inch stroke. Two Scotch boilers, 14 feet in diameter by 11 feet long, will be fitted with two furnaces each. They will have a working pressure of 180 pounds and will be equipped with forced draft.

### Builds Special Ship for Sand Trade

A highly specialized type of vessel, the only one of her class ever built in Canada, was recently completed by the Collingwood Shipbuilding Co., Ltd., Collingwood, Ont., for the National Sand & Material Co., Ltd., Welland, Ont. The object of the design is to meet the practical needs of efficient loading, carrying and discharging of sand and gravel. Having large contracts for this material for public works and for the Welland canal, the owners decided to have a vessel especially designed and built to meet the demands of their business, and the steamship *CHARLES DICK* is the result. Her dimensions are as follows:

Length overall, feet .....	258
Length between perpendiculars, feet .....	250
Breadth molded, feet .....	43
Depth molded, feet .....	20
Gross tonnage .....	2015
Deadweight, tons .....	2650
Capacity of cargo holds, cubic yards .....	2000

The vessel is built of steel to the requirements of the British Corp. for the survey and register of shipping. Her propelling machinery is placed aft and consists of a triple expansion, reciprocating engine having cylinders 19 x 32 x 56 inches in diameter and 36-inch stroke. The two boilers are 14 feet 7 inches in diameter by 10 feet 8 inches long.

Forward of the machinery space, the vessel is divided into two cargo holds. Sand and gravel is fed into these holds by means of a continuous trough with discharge openings located at intervals. Buoyancy tanks on each side in way of cargo holds are closely subdivided with watertight bulkheads. Water ballast is carried in the double bottom tanks under the machinery space and in the peak tanks.

Suction is the method used in loading. Two 18-inch pumps located forward provide the necessary vacuum. Unloading is accomplished with a grab bucket carried on A-frames. The grab bucket is elevated vertically, then moved in a horizontal direction to a point amidships and emptied into a hopper which in turn feeds an elevator and conveyor landing the cargo on the dock.

The Robins Dry Dock & Repair Co., New York, has received a contract for reconditioning the shipping board liner *PRESIDENT ROOSEVELT*. The Robins bid was \$63,000.



# Marine News in a Personal Way

Intimate Gossip About What Leaders in the  
Maritime World Are Doing

**M**AJ. GEN. JAMES G. HARBORD is resigning as deputy chief of staff of the United States army to become president of the Radio Corp. of America, New York, succeeding EDWARD J. NALLY. Mr. Nally becomes the corporation's managing director of international relations with headquarters in Paris. General Harbord did conspicuous service during the war, in command of fighting forces and as chief of staff to General Pershing.

\* \* \*

J. H. W. STEELE of New Orleans and Galveston has disposed of his interests in the Steele Steamship Lines to SEMMES STEELE of Galveston and NEAL M. LEACH of New Orleans. He will continue as chairman of the board but will spend most of his time on his California ranch. He will not give up direction of the J. H. W. Steele Co. which operates its own and chartered ships.

\* \* \*

C. A. TORRANCE, formerly freight agent for the Gould railroad lines at New Orleans and for two years traffic manager for the Steele interests, has left the latter to become manager of the Independent Warehouse Co., New Orleans. His successors are J. L. STULB in charge of foreign and W. A. FOERSTER in charge of intercoastal traffic.

\* \* \*

J. F. McCONKEY, field representative of the Sperry Gyroscope Co., Brooklyn, is now stationed in Seattle giving personal attention to installations and repair work, with offices in the Central building.

\* \* \*

S. T. DE MILT, agent for the New York & Porto Rico Steamship Co., was re-elected president of the New Orleans Steamship association for the eleventh consecutive term at the recent annual election.

\* \* \*

W. H. REED, formerly of New Orleans, has become manager of the Philadelphia Ocean Traffic bureau, a civic body devoted to building up the port of Philadelphia.

\* \* \*

ROBERT B. LEA, manager of the marine department of the Sperry Gyroscope Co., was in Seattle recently. He visited the steamer DELLWOOD, being converted into

a cable vessel for the signal corps of the war department, on which gyroscope installation will be made. He also lectured at the University of Washington on the development of gyroscopic apparatus and appliances used in navigation.

\* \* \*

S. D. CODLING has resigned as chief engineer of the steamship PRESIDENT MCKINLEY to take a position as field agent for Todd Dry Docks, Inc. He



JOHN GAMMIE

Recently appointed Chicago manager of the Cunard and associated lines

was formerly an engineer inspector for the shipping board.

\* \* \*

CAPT. E. G. FROBERG, who has been port captain for the Admiral line in the Orient, has been appointed port captain at Seattle for the same company, succeeding CAPT. CHARLES HANSEN.

\* \* \*

A. MELVILLE DOLLAR, formerly managing director of the Canadian Robert Dollar Co., has incorporated the Universal Shipping Co., with headquarters at Vancouver, B. C., for ship chartering and brokerage.

\* \* \*

L. L. BATES has been named as general freight agent for the Admiral Oriental line. Mr. Bates was formerly foreign freight agent for the Admiral line.

DEAN J. HANSCOM has been appointed general passenger agent of the shipping board's freight and passenger service between Seattle and Oriental ports. Both will have headquarters at Seattle.

\* \* \*

GEORGE PALMER, of Portland, Oreg., has gone to Kobe to assume his duties as assistant general manager in Japan for the Columbia-Pacific Steamship Co.

\* \* \*

CAPT. WALTER M. HUNT of the Tacoma, Wash., navy yard, has been transferred to Portsmouth, N. H., as captain of the navy yard there.

\* \* \*

MAJ. PAUL EDWARDS, former newspaper man and veteran of the late war, has been appointed port warden at Seattle, succeeding FRED M. LATHE.

\* \* \*

J. B. ARMSTRONG, formerly agent for the Pacific Steamship Co. at Manila, has assumed his new duties as assistant to vice president, R. A. HAINES, of the Admiral Oriental line, with headquarters at Seattle. Mr. Armstrong succeeds M. J. WRIGHT, recently appointed agent for the Luckenbach line.

\* \* \*

COMMANDER P. H. UBERROTH of the United States coast guard, has been detached from duty in command of the lakes division, Sault Ste. Marie, Mich., where he has been captain of the port, and assigned to the command of the eastern division, New England coast, with headquarters in Boston.

\* \* \*

CAPT. M. M. JENSEN, disciplined several months ago by the shipping board for exceeding speed regulations with the Admiral Oriental liner PRESIDENT GRANT, has resumed his command. The doughty master's offense was based on his accepting the challenge of a rival British steamer while both were steaming from Yokohama to Victoria, B. C. The fast American liner outdistanced her Canadian rival but Captain Jensen was relieved of his command for one voyage. During this time, he served in coastwise vessels and as pilot for the Pacific Steamship Co. Captain Jensen says he will hereafter not challenge rival liners, although the speed regulations have been revised.

## Pacific Cargoes Exceed Available Tonnage

Shipping is active on the north Pacific. Ocean freights are showing a firmer tone although for sailing ships rates are still exceptionally low and unattractive. On the intercoastal route the movement of freight has grown phenomenally. Notwithstanding additional vessels the various lines are unable to accommodate all the cargo offering for eastbound shipment. This is particularly true of lumber and shingles. Better paying cargo, such as dried fruits, fish and canned goods, has been offering freely so that forest products have been unable to get the space desired. The lumber rate is now firm at \$16.

On the transpacific route conference rates are now firmly established and the volume of freight is more than sufficient to fill the regular lines. This trade presents the anomaly of tramp tonnage, asking higher rates than those of the regular lines. So strong is the demand for space that going freights are somewhat higher than conference levels.

There is evidently an upward tendency in ocean freights generally, judging by the reluctance of owners of tramp vessels to offer their tonnage. In all directions a scarcity of steamers is reported.

The European lines are handling a heavier volume than a year ago. The movement of grain from Vancouver, B. C., is breaking all previous records. Parcel space for wheat has firmed from 28 shillings in September to 40 shillings. Full cargo charters have been closed at 38s 9d for United Kingdom and even at this level it is difficult to obtain steamers.

The coastwise business is unusually heavy, lumber shipments to southern California taxing all available tonnage. Freights are firm at \$7.50 to \$8. Australia is buying large quantities of lumber, the rate by steam being \$14 and \$15 while \$13 is being paid for sailers. Business to Peru and Chile is showing more activity although most of this business is being done in parcel shipments.

## Obituaries

Maj. George A. Heyburn, Oriental manager of the Admiral-Oriental line, died recently at Shanghai. For 20 years Major Heyburn was actively connected with shipping on the north Pacific and for a long time worked as purser on transpacific lines. He served with distinction during the war. His knowledge of shipping was used to good advantage at the army supply bases where he was stationed.

Harry C. Lord, United States steamboat inspector stationed at Seattle, died recently at his home. Mr. Lord had

lived on Puget sound for more than half a century. He was one of the best known marine engineers on the north coast. Since 1903 he had been in government service.

Frederick Metcalf, treasurer of the American Ship Windlass Co., Providence, R. I., from 1895 to 1898, died recently in Cleveland at the age of 56 years. He was vice president of the Madison Foundry Co. and treasurer

## Index Ready For Subscribers

*EDITORIAL* contents of MARINE REVIEW for the year 1922 are given briefly, but completely, in an index just completed. This index is published in the same size as the magazine in order to permit binding, with the regular monthly issues, by the many subscribers who keep the magazine in this permanent form. The index can be secured by any subscriber, free of charge, upon application to MARINE REVIEW, Cleveland.

of the Chase Machine Co., both of Cleveland. He was born in Providence, was graduated from the Massachusetts Institute of Technology and was a member of the Society of Naval Architects and Marine Engineers.

John D. Walsh, retired contractor and dockbuilder, founder of the firm of John D. Walsh, Inc., Long Island City, N. Y., died recently at his home in Forest Hills, L. I. He was in his eighty-first year.

Capt. Daniel R. Loosley, a veteran of the civil war died in New London, Conn., Nov. 20, aged 89 years. He was on the steamer STAR OF THE WEST when she attempted to relieve Fort Sumter in 1861.

## Big U. S. Motorship Gives Satisfaction

Motorship MISSOURIAN, owned by the American Hawaiian Steamship Co. and operated by the United American Lines, arrived at New York on Nov. 27, completing her maiden voyage to the Pacific coast, thence to Europe and return. Her performance on this trip of more than 20,000 miles was pronounced by her officers as most satisfactory.

The voyage began on July 27, no engine room repairs were required and her machinery ran without a hitch, on a fuel consumption of from 112 to 114 barrels of oil per day. Her average speed from Hamburg to the United States was more than 12 knots. The MISSOURIAN was ready to sail for the west coast without any repairs to the propelling machinery.

## To Build Big Elevator

As a grain terminus of first importance and as the greatest shipping port of Canada, Montreal intends to live up to her opportunities. Work is to be started at once on a new \$10,000,000 grain elevator with a capacity of 10,000,000 bushels. The elevator will be located in the eastern part of the harbor. To illustrate the congestion in the central and western part of the harbor where all the berths are leased to liners, cargo boats loading at these berths must move when a liner arrives. In one case, a tramp steamer was forced to shift 14 times.

## Sales of Shipping Board Vessels

HUMACONNA, steel ocean going tug, 418 gross tons, sold Nov. 16 to George R. Cary, Seattle.

MARTHA WASHINGTON, combination cargo and passenger ship, 6540 deadweight tons, 7412 gross tons, sold on Nov. 27 to Cosulich line, Trieste, Italy.

UTACARBON, tanker, 10,078 deadweight tons and 7076 gross tons, sold Dec. 2 to Union Oil Co., Los Angeles.

CATHWOOD, tanker, 10,078 deadweight tons and 7072 gross tons, sold Dec. 2 to Union Oil Co., Los Angeles.

DELROSA, steel cargo, 5125 deadweight tons and 3474 gross tons, sold Dec. 2 to Alaska Steamship Co., Seattle.

LAKE SLAVI, steel cargo, 4278 deadweight, 2674 gross. Bought by Lykes Bros. Steamship Co., Inc., 25 Beaver street, New York.

LAKE FLORIAN, steel cargo, 4145 deadweight, 2606 gross. Bought by Lykes Bros. Steamship Co., Inc., 25 Beaver street, New York.

H. PLAINFIELD, steel cargo, 4112 deadweight, 2962 gross. Bought by Baltimore & Carolina Steamship Co., American building, Baltimore.

POINT ARENA, steel cargo, 3270 deadweight, 2117 gross. Bought by Siler Mill Co., Raymond, Wash.

LAKE GALIEN, steel cargo, 4208 deadweight, 2689 gross. Bought by Philadelphia & Norfolk Steamship Co., Philadelphia.

LAKE TIPPAH, steel cargo, 4155 deadweight, 2606 gross. Bought by Philadelphia & Norfolk Steamship Co., Philadelphia.

MEDON, steel cargo, 5118 deadweight, 3474 gross. Bought by Alaska Steamship Co., 120 Broadway, New York.

\*LAKE SUNAPER, steel cargo, 2922 deadweight, 2009 gross. Bought by W. J. Gray Jr., San Francisco.

\*This ship is to be converted to diesel propulsion by the purchaser.

HAMBRO, steel tanker, 9962 deadweight, 6900 gross. Bought by General Petroleum Corp., 71 Broadway, New York.

COUTOLENE, steel cargo, 4125 deadweight, 2450 gross. Bought by Anthony O'Boyle, 16-18 Bridge street, New York.

## Assigned Shipping Board Vessels

WEST MUNHAM, 8635 tons. Assigned to Daniel Ripley & Co., Galveston, Tex., for their Houston-Havre-Antwerp-Ghent service.

MORRISTOWN, 7323 tons. Assigned to Export Transportation Co., Baltimore, for its Baltimore-Norfolk-London-Hull-Leith service.

RADNOR, cargo ship, 11,572 deadweight tons, assigned on Nov. 15 to Tampa Inter-Ocean Steamship Co., Tampa, Fla., for its Gulf-Philippine service.

# Uniform Tonnage Rules Needed

World Wide Adoption of Standard Measurement Regulations  
Would Benefit Shipping—How Present Rules Originated

**S**TEAMSHIP operation under the most favorable circumstances is an intricate and complicated business. The shipowner must have a full and clear knowledge of many facts, laws, customs, rules and regulations, in order to effect economies which are vital to his success. One of the important items is the ship's register tonnage, on which many fixed and other charges are based throughout her life.

For a vessel to trade at any port of the United States and under the United States flag, it is necessary according to the navigation laws of the country that she be documented. The law provides for three classes of documents, depending upon the service and size of vessel. To engage in foreign trade, a certificate of register is issued by the collector of the port and the facts of registration entered into proper records. This certificate contains and in fact can not be issued unless it does, among other things, a detailed account of the measurement of the vessel, stating her gross and net register tonnage.

Port charges, government dues, tolls, etc., in fact all public charges and many private charges such as drydocking are based on the ship's tonnage measurement as given by her certificate of registry. It is the one figure above all others in connection with the ship which she carries fixed and settled officially throughout her career. On this account in order to minimize as much as possible fixed charges, it is of the utmost importance that in the design of the ship for her class the characteristics which determine her tonnage should be most carefully considered. The architect while safeguarding fully the proper construction for strength and seaworthiness, should give her under the law a minimum measurement with maximum cubic and deadweight carrying capacity.

## U. S. Ships on Equal Rating

The laws of any nation governing measurement are, of course, in the hands of the government issuing the certificate, but in this as in other affairs one can not have one's cake and eat it too. Any radical change in the laws of a nation governing measurement which manifestly and greatly reduce the tonnage measurements would undoubtedly be met with reprisals.

In this connection it is interesting

***F**Riction between vessel operators and government officials of maritime nations frequently arises through the different interpretations given to the rules for measurement. Each nation makes its own rules according to interpretations which change constantly in an effort to meet temporary advantages held by other nations. This lack of uniformity is a handicap to world shipping, which could be removed by establishing a world wide standard. The need for such a standard is discussed in the accompanying article, while immediately following is an analysis of how this measurement problem affects operators trading through the Panama canal.*

to note from the annual report of the commissioner of navigation of the United States for 1915 (pp 44-46).

As the measurement laws and regulations of the United States stands today the tonnage basis for charges on an American ship are no greater than on a foreign ship, and in some cases they will be materially less in the following respects.

1. The American law imposes no charges on deck cargo similar to the British charges.

2. Spaces adapted only for water ballast (other than the double bottoms) are not included in gross tonnage under the act of Feb. 6, 1909, while they are so included under the British system. Double bottoms for water ballast have not been included in the gross tonnage since the act of March 2, 1895, which accords with the general practice of maritime nations.

3. Under section 4151 of the revised statutes no part of a vessel that is used for cabins and staterooms and constructed entirely above the first deck, which is not a deck to the hull, is included in the gross tonnage.

4. The deductions for propelling power, under the British act of 1907, can not exceed 55 per cent of the gross tonnage after certain minor spaces have been subtracted. Our law contains no such limitation on the deduction for propelling power.

The reasons why such limitation seem desirable were set forth in this report for 1909 (p. 79).

It is a fact then that in the matter of tonnage measurement the American flag merchant ship is not at a disadvantage as compared with her foreign rivals.

To draw the conclusions from the above that the rules governing measurement of vessels based on the laws

now in existence in the United States, Great Britain or any other maritime countries, are correct in principle or in a practical way is erroneous. The laws in existence governing these rules are far from correct in principle. Everyone will agree with Prof. E. R. Johnson that the proper basic principle on which rules for measurement should rest is the closest practicable approximation of the earning capacity of vessels of different types.

A study of the history of the rules for measurement now in use in Great Britain, the United States and practically every maritime country shows little uniformity in the practice of the several countries as to the exemption of measurement of space within the vessel. A commission appointed by the British admiralty in 1849, at the request of the board of trade, reported certain recommendations for a change in the rules of measurements for vessels. Mr. Moorsom, honorary chairman of the commission did not approve the findings. As it became evident that the report of the committee would not be accepted, Mr. Moorsom worked out a mathematical formula for determining cubical contents of vessels, and the ships then registered under the British flag were measured by these rules. This showed that the cubical contents of the entire British merchant marine divided by the then total registered tonnage of the fleet came to 98.22.

## Method of Measurement Adopted

In order to make as little change as possible in the registered tonnage, it was suggested by Mr. Moorsom that in order to simplify calculation, 100 cubic feet instead of 98.22 should be considered a gross ton. This suggestion was adopted and in the British tonnage act of 1854 Mr. Moorsom's recommendations for measurement rules and tonnage were embodied in three rules which to this day differ only in minor respects from those originally formulated.

The United States by the act of 1864 adopted the Moorsom system of measuring spaces and the Moorsom ton. In like manner, the international tonnage commission which met in Constantinople in 1873 to formulate rules for measurement of vessels using the Suez canal adopted the Moorsom measurement for gross tonnage and the Moorsom ton as a unit of measure-



ment. As a result, a vessel's ton is everywhere 100 cubic feet and the contents of vessels are determined by Moorsom's system.

The basis then for the measurement of vessels all over the world is uniform and sound. Variations and inconsistencies have crept in due to the different interpretation of exemptions from measurement of gross tonnage and the deduction to give net tonnage.

#### Inconsistencies in Present Rules

Bearing in mind the correct guiding principle stated above that net tonnage should be the closest practicable approximation of the earning capacity of vessels of different types, the present day British and American rules depart from this principle particularly in two glaring instances.

First: Shelter deck spaces such as fore-castle poop and bridge spaces, are not included in the measurement of net tonnage when not permanently closed in. The joker here lies in the interpretation of "permanently closed in." Prior to July 13, 1915, the American rule in regard to this interpretation was much stricter than the British and consequently the British then had a real advantage in tonnage on this account. Since 1915, though its practical application did not begin to be felt till 1919, the interpretation of this rule is quite as liberal in the United States as in England. As a result of the liberal interpretation of the rules, every practical man knows that bridge, poop and fore-castle space can now be used for perishable cargo at will, and still not enter into the tonnage of the ship, simply by the use of so-called tonnage openings.

The viciousness of this condition of affairs is that the tonnage openings while not in any way preventing the owner from carrying cargo in this space, have resulted in increasing the expense of cutting tonnage openings and covering them with unsightly and unseaworthy plates fastened in a manner purposely prescribed not to give a good watertight job.

The unsatisfactory tonnage opening cover does not prevent carrying cargo, it merely increases the risks and everyone, of course, takes the risk to obtain the advantage accruing. It is merely a legal way of evading the original intention of the rules and it is vicious, unsatisfactory and absurd. It would be much better if the ship was allowed to remain as properly designed and built and this space exempted from measurement.

This condition also tends to bring

on disputes with the representatives of the government. If any deviation from the rules is found, in the manner in which these openings on account of particularly precious cargo or heavy weather, may temporarily have been made more seaworthy than they should have been, the owner meets inconvenience and expense in the claim that this space under the circumstances must be added to the tonnage. This increases the tolls and the charges and the difficulty of again having it declared exempt.

Second: Variable deductions are allowed for propelling machinery. Two well known rules, the Danube and the British or board of trade rules are used.

The Danube is based on sound principles, but the British rule makes a larger deduction possible and is the rule now in general use. This rule states that in screw vessels where the tonnage of space occupied by machinery and boilers is above 13 per cent and under 20 per cent of the gross tonnage, the deduction is 32 per cent of the total gross tonnage; if 20 per cent and above, the deduction shall be 37 per cent of the gross tonnage; if 13 per cent or below, the deduction equals  $1\frac{3}{4}$  times the actual space. The Danube rule states that to machinery and boiler space should be added 75 per cent of such space for propelling machinery deduction in the case of screw vessels. The British rule, in this case, is arbitrary and unscientific in that it is not equally fair to all types of ships.

#### How the Rules Are Used

As an example, take a ship in which machinery and boiler space is equal to 14 per cent of the gross tonnage; the deduction for propelling power equals 32 per cent of gross tonnage. Under the Danube rule, the propelling power deduction equals 14 per cent  $\times 1\frac{3}{4}$  equals 24.5 per cent of the gross tonnage. Where this space is equal to 16 per cent, the deduction for propelling power under the British rule will still be the same, that is, 32 per cent of the gross tonnage. By the Danube rule 16 per cent  $\times 1\frac{3}{4}$  equals 28 per cent.

The British rule, within certain limits, allows the same deduction and consequently places a premium on the smaller propelling machinery space. In the case of the Danube rule, the deduction is in direct proportion to the space provided for propelling machinery.

The above two are taken as illustrating the most important interpretations which have tended arbitrarily

to lower the tonnage measurement. In some countries, the net tonnage of vessels averages only 61 per cent of the gross tonnage while in other countries the average is over 70 per cent.

Though the original British rules have been widely adopted since 1850, the actual application of these rules by all the maritime nations varies. At different periods in the past, the result has been a wide variation in results due principally to the desire of each country to aid ships under its own national flag.

No self-aggrandizement of this nature can, however, long succeed since it can and would be met by modifications in their laws on the part of other nations or by concerted action and pressure of one kind or another to remove the apparent advantage.

#### World Wide Standard Needed

All reasonable people will agree that it would be of great benefit to have uniform laws and interpretation on this subject in all maritime countries of the world.

At the present time, the logical standards are the Panama canal rules. These are based upon the most recent and thorough survey and study of the question of vessel measurement. They are in a sense the embodiment of the experience of all the past. They should, therefore, represent the highest mark of development, and could be used with the Suez canal rules from which they do not differ greatly, as the basis for common action on the part of the nations for the unification of measurement laws. No better statement of today's needs and reasons for world-wide uniformity in the laws governing measurement can be made than to go back to a memorandum which was prepared in 1862 by the British board of trade.

This says, "If one system could be adopted by all maritime nations, so that the capacity of any given ship when once officially ascertained and denoted on her official papers, could be everywhere understood and recognized as valid, the advantages gained would be very great. The statistics of navigation would be rendered more simple, intelligible and accurate. The merchant or shipowner would at once understand the size and capacity of the ships he employs or purchases; he would also escape the annoyance and expense of remeasurement, and lastly taxation when imposed would be rendered more simple and more just. Under these circumstances there can be but one opinion as to the utility, if not the necessity, of some general system of measuring merchant shipping."



# Vessel Owners Can Save Tolls by Analysis of Panama Rules

**T**OLLS charged for transit through the Panama canal of any merchant ship whether American or foreign are based on exactly the same rules of measurement. No ship has any advantage nor can any advantage be gained by any ship through the cunning of her officers despite reports of isolated cases of prejudiced treatment. This flat statement is necessary in order to clear away the fog which seems to envelop the subject of Panama canal tolls.

Positive confirmation of the equality of measurement standards is given in the following table. This shows the gross and net tonnage measured both by British and United States rules of several British vessels which have recently used the Panama canal:

	Gross tons	Net tons
<b>STEAMSHIP BENVOLICH</b>		
Measured by British rules.....	5,193	3,222
Measured by United States rules	5,145	3,217
<b>STEAMSHIP CANBRIDGE</b>		
Measured by British rules.....	10,985	6,933
Measured by United States rules	10,891	6,865
<b>*STEAMSHIP EUTERPE</b>		
Measured by British rules.....	3,540	2,298
Measured by United States rules	4,278	2,730
<b>†STEAMSHIP SANTA ROSALIA</b>		
Measured by British rules.....	5,409	3,488
Measured by United States rules	5,482	3,440

\*When measured originally her poop space was open. At Panama this space was closed, causing the higher rating.

†Remeasured Dec. 1 on transfer from British to American registry. Increased gross resulted from additional capacity provided in bridge space.

As the Panama canal began to near its completion, the question of tolls and measurement on which to charge tolls came up for solution. Prof. Emory R. Johnson, special commissioner on Panama canal traffic and tolls, on Sept. 1, 1911 was asked by the secretary of war "to formulate rules and regulations governing the measurement of ships going through the canal and to make an investigation and recommendation regarding tolls to be charged." On Aug. 7, 1912 a report was submitted to the secretary of war on Panama canal traffic and tolls and the rates of toll recommended in that



In one trip through the Panama canal, a vessel of the above type can save approximately \$1200 in tolls if advantage is taken of the opportunities offered by the measurement rules. The vessel illustrated is one of the Hog Island type and is shown, fully loaded, passing through Gaillard cut, Panama canal

***A**MERICAN ships transiting the Panama canal pay higher or lower tolls depending upon whether advantage is taken of the deductions allowed by the rules. Despite the common impression, United States rules of measurement do not give higher tonnage to American ships, than the tonnage of foreign ships of the same size. Though the Panama canal rules of measurement contain the best elements of United States and foreign regulations, they are only the nominal basis for levying tolls. This condition at Panama where the best formulated rules can not be used exclusively to determine tolls, is a symptom of the general lack of regularity in tonnage measurement all over the world. This subject is fully discussed in the preceding article.*

report were established by a proclamation of the President on Nov. 13, 1912. The proclamation further directed the secretary of war to prepare and prescribe such rules for the measurement of vessels and such regulations as would be necessary to carry it into full force and effect. By the act of Aug. 24, 1912, congress limited charges to not more than \$1.25 per net register ton and not less than 75 cents.

Prof. E. R. Johnson after a long, painstaking and intelligent study of the entire subject of rules for measurement from its beginning, through their application for other famous canals and particularly the Suez, finally submitted to the

secretary of war on Oct. 2, 1913, a report in which definite rules for the measurement of vessels for the Panama canal were recommended. On Nov. 21, 1913 by proclamation of the President, these rules became the official Panama canal rules for measurement.

The author of these rules was actuated solely by the motive to make them true in principle, that is, that they should represent the closest practicable approximation of the earning capacity of vessels of different types. On the question of the amount of tolls, the guiding thought was to make them low enough to attract traffic through the canal but at the same time sufficient so that in time as traffic grew the tolls would place the canal on a self-supporting basis. No impartial shipowner could find anything to quarrel with either as regards the principle underlying the rules of measurement, or the method of arriving at the amount of tolls.

The Panama rules are patterned after the Suez rules as these were found far more in accord with the principle laid down than either the British or American rules. On the assumption that lessons learned in the past were conscientiously and intelligently applied in the making of the Panama rules, they may be said to embody the long period of practical experience from 1850 down to the present, subjected to study and analysis by trained and competent minds. Furthermore, they were presented for criticism to other trained and practical men. For this reason, the question of Panama canal rules of measurement and the amount of tolls, was handled in an effi-



cient and thorough manner. Under these rules, the tolls are \$1.20 per ton loaded and 72 cents per ton in ballast.

Congress in the act of Aug. 24, 1912, however, unconsciously spoiled the well laid plans for simple, efficient straightforward rules governing ship measurement and toll charges. Wishing to limit the authority of the canal officers in fixing the amount of the tolls, the proviso was inserted that no charge should be made in excess of \$1.25 per net register ton nor any less amount than 75 cents per net register ton. The use of the word register led to legal processes and

the courts ruled that by register tonnage was meant the ship's registered tonnage under the United States national rules. As a result, though all ships, in order to go through the canal, must have a Panama canal tonnage certificate and have their charges figured on that basis, the limit of the amount collectable is \$1.25 per net register ton according to the United States national rules. Foreign ships must show their net tonnage according to United States national rules. This figure will practically always be less than the Panama canal tonnage and canal tolls will consequently

be limited by this figure.

The ideal then of a single, clear simple standard for fixing the charges for transit of the canal came to nothing. As a result, the United States national rules became of paramount importance for all ships of whatever nationality using the canal. Any changes in these rules are immediately reflected in the amount of the tonnage on which tolls may be levied. Consequently the amount charged may be changed between trips through the canal causing considerable resentment on the part of the owners for what appears to them to be

## TABLE I How U. S. and Panama Rules Affect Tonnage and Tolls

AMERICAN SHIPS THROUGH PANAMA CANAL, OCT. 7 TO OCT. 28, 1922

Toll Rates Panama Canal

Tolls \$1.20 per net ton Panama load; \$0.72 ballast. Tolls not to exceed \$1.25 multiplied by United States net tons; not to be less \$0.75 multiplied by United States net tons.

Name	Gross tons		Net tons		Cargo Tons	Tolls estimated—		Difference in tolls	Type
	United States	Panama	United States	Panama		Panama	United States		
Advance	2,458	2,947	1,481	2,113	718	\$ 2,535.60	\$ 1,851.25	\$ 684.35	Passenger
Sylvan Arrow	7,797	9,931	4,858	7,095	11,400	8,514.00	6,072.50	2,441.50	Tanker
Ecuador	5,544	5,926	3,435	4,178	2,569	5,013.60	4,293.75	719.85	Passenger
Williario	5,268	5,680	3,347	4,162	5,625	4,994.40	4,183.75	810.65	Freighter
Patrick Henry	8,295	8,987	5,289	6,612	4,178	7,934.40	6,611.25	1,323.15	Freighter
Wm. A. McKenny	6,256	6,532	4,544	4,528	4,350	5,433.60	5,680.00	—246.40	Freighter
Phyllis	2,258	2,295	2,128	2,130	3,092	2,556.00	2,660.00	—104.00	Bark
Panamian	6,499	7,098	4,032	5,029	5,195	6,034.80	5,040.00	994.80	Freighter
F. J. Luckenbach	7,821	8,508	4,951	6,179	5,500	7,414.80	6,188.75	1,226.05	Freighter
John D. Archibald	14,054	14,785	8,790	10,313	Ballast	7,425.36	6,592.50	832.86	Tanker
Cowanahannock	2,532	2,936	1,514	1,729	2,575	2,074.80	1,892.50	182.30	Freighter
Santa Ana	4,869	5,776	2,892	4,081	1,679	4,897.20	3,615.00	1,282.20	Passenger
El Cicuta	2,396	2,676	1,417	1,490	3,302	1,788.00	1,771.25	16.75	Freighter
Santa Rosa	6,415	6,754	3,918	4,780	Ballast	3,441.60	2,938.50	503.10	Freighter
Pennsylvanian	6,499	7,107	4,032	4,916	5,000	5,899.20	5,040.00	859.20	Freighter
Ardmore	7,035	8,612	4,390	6,457	10,601	7,748.40	5,487.50	2,260.90	Tanker
Eastern Moon	5,716	5,904	4,271	4,321	7,528	5,185.20	5,338.75	—153.55	Freighter
Redondo	4,113	4,419	2,955	3,230	3,445	3,876.00	3,693.75	182.25	Freighter
Mexican	8,414	9,258	5,338	6,789	10,634	8,146.80	6,672.50	1,474.30	Freighter
Steel Exporter	5,686	7,611	3,450	5,450	6,680	6,540.00	4,312.50	2,227.50	Freighter
Blue Triangle	5,120	6,609	3,117	4,317	5,965	5,180.40	3,896.25	1,284.15	Freighter
Marore	7,921	15,551	4,396	4,297	20,000	5,156.40	5,495.00	—338.60	Ore carrier
Balboa	615	737	372	335	570	402.00	465.00	—63.00	Passenger
Garfield	2,941	3,228	1,699	2,010	2,124	2,412.00	2,123.75	288.25	Freighter
Munaires	4,620	5,577	2,866	4,225	2,500	5,070.00	3,582.50	1,487.50	Freighter
Orleans	6,629	7,330	4,122	5,233	5,200	6,279.60	5,152.50	1,127.10	Freighter
Benj. Brewster	5,950	6,177	3,677	4,244	Ballast	3,055.68	2,757.75	297.93	Tanker
Howick Hall	5,096	6,095	3,131	4,914	5,900	5,257.20	3,913.75	1,343.45	Freighter
West Notus	5,652	6,583	3,522	4,381	5,477	5,896.80	4,402.50	1,494.30	Freighter
Santa Paula	6,275	6,744	3,833	4,825	4,048	5,790.00	4,791.25	998.75	Freighter
Montana	7,771	8,696	4,829	6,315	6,924	7,578.00	6,036.25	1,541.75	Freighter
Frank Lynch	2,009	2,182	1,197	1,325	Ballast	954.00	897.75	56.25	Freighter
Bethore	14,899	15,476	9,615	11,102	Ballast	7,993.44	7,211.25	782.19	Ore carrier
Robin Gray	6,896	7,472	4,267	5,542	9,467	6,650.40	5,333.75	1,316.65	Freighter
A. F. Luckenbach	10,725	11,487	6,826	8,762	7,066	10,514.40	8,532.50	1,981.90	Freighter
Independence	7,597	8,290	4,753	6,063	6,785	7,275.60	5,941.25	1,334.35	Freighter
Brush	5,115	6,209	3,124	4,317	4,000	5,180.40	3,905.00	1,275.40	Freighter
Agwistar	5,229	5,523	3,893	4,203	5,626	5,043.60	4,866.25	177.35	Freighter
Steel Mariner	5,686	7,539	3,450	5,448	7,625	6,537.60	4,312.50	2,225.10	Freighter
Craster Hall	4,319	4,945	2,758	3,508	5,900	4,209.60	3,447.50	762.10	Freighter
Sunbeam	6,664	7,701	4,148	5,472	10,752	6,566.40	5,185.00	1,381.40	Tanker
Texas	8,594	9,154	5,505	6,970	9,244	8,364.00	6,881.25	1,482.75	Freighter
Santa Luisa	4,847	5,694	2,889	3,975	4,007	4,770.00	3,611.25	1,158.75	Passenger
Robert Luckenbach	8,150	8,617	5,099	6,297	8,970	7,556.40	6,373.75	1,182.65	Freighter
Santore	7,117	7,807	4,498	5,139	11,800	6,166.80	5,622.50	544.30	Ore carrier
Santa Veronica	2,647	2,823	1,542	1,740	3,327	2,088.00	1,927.50	160.50	Freighter
Kentuckian	6,432	7,049	4,007	4,941	9,057	5,929.20	5,008.75	920.45	Freighter
A. L. Kent	6,213	7,046	4,576	5,030	8,200	6,036.00	5,720.00	316.00	Freighter
Steel Worker	5,686	7,611	3,450	5,497	7,835	6,596.40	4,312.50	2,283.90	Freighter
Santa Tecla	2,492	2,832	1,483	1,803	1,431	2,163.60	1,853.75	309.85	Freighter
Newport	2,643	3,173	1,653	2,163	196	2,595.60	2,066.25	529.35	Passenger
Venezuela	5,641	6,033	3,443	4,353	2,500	5,223.60	4,303.75	919.85	Passenger
Sabine Sun	6,728	7,898	4,083	5,459	Ballast	3,930.48	3,062.25	868.23	Tanker
Dakotan	6,501	7,156	4,014	5,058	5,157	6,069.60	5,017.50	1,052.10	Freighter
Argosy	4,995	6,203	3,039	4,280	794	5,136.00	3,798.75	1,337.25	Freighter
Felix Taussig	6,253	6,594	4,544	4,503	4,396	5,403.60	5,680.00	—276.40	Freighter
Long Beach	3,128	3,195	1,806	2,085	2,993	2,502.00	2,257.50	244.50	Freighter
Kewance	3,550	3,660	2,125	2,268	Ballast	1,632.96	1,593.75	39.21	Tanker
Santa Elisa	5,004	5,957	3,021	4,325	1,609	5,190.00	3,776.25	1,413.75	Passenger
Com. Pathfinder	4,789	5,220	2,953	3,734	6,685	4,480.80	3,691.25	789.55	Freighter
Newport	2,643	3,173	1,653	2,163	738	2,595.60	2,066.25	529.35	Passenger
Chester Sun	6,669	7,684	4,091	5,299	Ballast	3,815.28	3,068.25	747.03	Tanker
Colombia	5,643	6,015	3,448	4,281	2,030	5,137.20	4,310.00	827.20	Passenger
Gratia	1,582	1,630	1,462	1,493	1,745	1,791.60	1,827.50	—35.90	Bark
Stanley Dollar	3,411	3,460	2,004	2,404	4,000	2,884.80	2,505.00	379.80	Freighter
Ed. F. Luckenbach	7,923	8,568	5,004	6,705	7,000	8,046.00	6,255.00	1,791.00	Freighter
Harry Luckenbach	8,713	9,262	5,489	6,854	8,500	8,224.80	6,861.25	1,363.55	Freighter
Ipswich	6,214	6,616	3,751	4,614	7,262	5,536.80	4,688.75	848.05	Freighter
Balboa	615	736	372	335	164	402.00	465.00	—63.00	Passenger
Mundelta	4,746	5,668	2,955	4,297	4,450	5,156.40	3,693.75	1,462.65	Freighter
Wm. Rockefeller	14,054	14,785	8,790	10,330	22,000	12,396.00	10,987.50	1,408.50	Tanker
J. N. Pew	9,074	9,494	6,473	6,612	13,290	7,934.40	8,091.25	—156.85	Tanker
Steel Navigator	5,718	7,611	3,471	5,454	8,090	6,544.80	4,338.75	2,206.05	Freighter



arbitrary practice which sometimes makes the tolls considerably more than expected.

Friction arises because canal officials will not take the United States national tonnage, if an American vessel, from the ship's certificate without investigation. They insist upon determining that the ship at the time she applies for transit in every way complies with the United States rules allowing her the tonnage she shows on her certificate. They make a similar study in the case of a foreign ship carrying a certificate of her tonnage under the United States rules. If the foreign ship is not provided with a United States certificate, the canal officials will make all necessary inspection and measurement of the ship to establish her tonnage under the U. S. rules.

The following outline of the methods followed at the canal is taken from a report made by the chief admeasurer at Cristobal:

"The main source of misunderstanding and ill will in connection with measurement and the levy of tolls lies in our consistent and impartial application of the portion of said rules (United States measurement rules) relating to the exemption of shelter deck, forecastle bridge, and poop spaces, with consequent propelling power percentage adjustment necessitated thereby. The vicious circle is started by a ship's arrival with the tonnage openings of one or more of the foregoing spaces closed in a manner incompatible for exemption under the United States rules. The inclusion of such spaces in the net tonnage as found under said rules results normally in an increase of 500 to 2000 tons above their national net tonnage based on rules similar to those of the United States, whereupon in due course the owners, after ascertaining the reason through correspondence with their agents and the admeasurers, exhibit a not unnatural irritation in paying \$625 to \$2500 more for their ship's transit than they contemplated.

"One of the chief reasons for action along this line is the use of gaskets or battening around the tonnage openings. In some cases the owners have actually discharged masters of such vessels, maintaining they should have known enough to remove these prior to arrival for transit. It often happens the succeeding master has explicit instructions on the point and, at next arrival, requests remeasurement which results in exemption of such spaces and hence greatly decreased tolls bill. With heavy weather outside prior to the third arrival, the mate naturally battens and calks the tonnage opening closures again, usually without telling the master. This necessitates another remeasurement, again increasing the tolls bill and involving further trouble for owners, master, and admeasurers.

"As long as the United States rules

remain the normal toll factor, or any factor for that matter, there is no alternative but to strictly apply them. It can not be disputed, however, that a vacillating system which admits of such

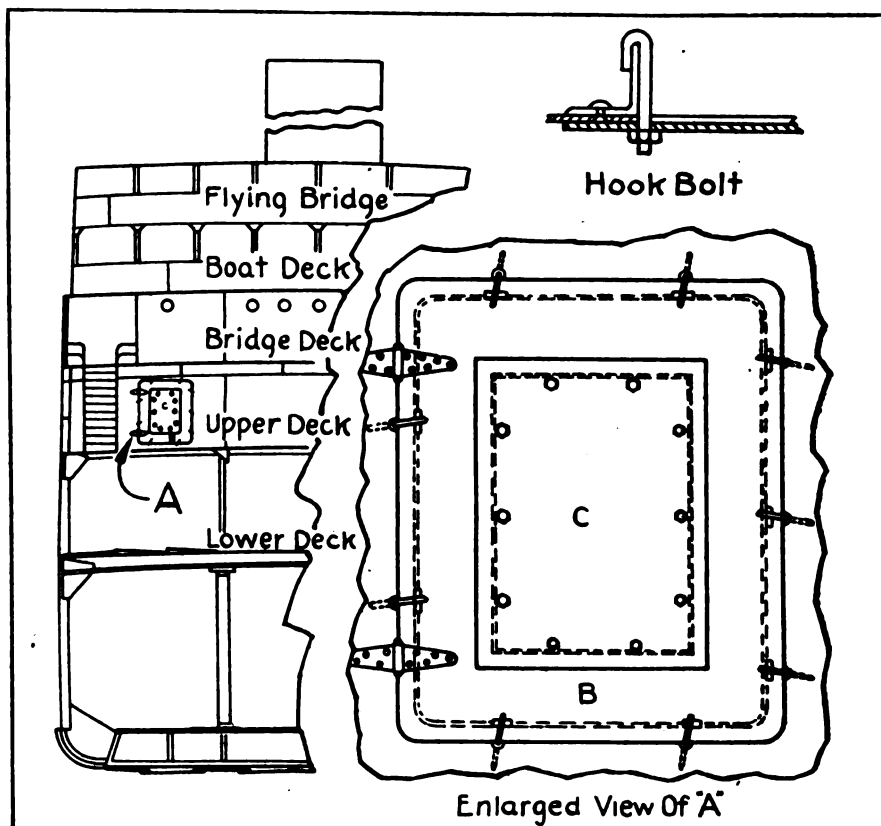
ficient knowledge, and thus causing increased resentment and exasperation on the part of the owners.

"In one case a series of letters from an agent requesting specific and legitimate

## How Shipowners Reduce Vessel's Net Tonnage

**S**HIPOWNERS who are acquainted with the interpretation of United States national rules for tonnage measurement know that bridge, poop and forecastle spaces may be deducted

of the opening, *C*, cut in the bulkhead door, *B*, must not be more than two feet above the deck, plate cover must not be gasketed and bolts for securing the cover must be spaced at least



from tonnage by cutting 3 x 4-foot openings in the bulkheads at these spaces. The general arrangement and detail of tonnage openings and method of covering is shown in this sketch for a three-island ship. The bottom

12 inches apart. Detail of hook bolt used also is shown. Plate cover secured in this manner is purposely not intended to be watertight, otherwise space within would not be deducted from tonnage.

juggling has already caused such ill feeling on the part of steamship owners that the mere subject of measurement is like waving a red flag at a bull.

"It can be contended that 'ignorance is no excuse' and that they should study the rules, issue to their masters specific instructions thereon and see that same are carried out. Yet it often happens that when they think they are set straight on these matters it is found that they have overlooked one of the many vagaries of said rules and are thereby compelled to start all over again.

"Many agents here are endeavoring to act as consulting admeasurers to their principals, almost invariably without suf-

information on certain points respecting measurement of vessels of his principals necessitated 17 hours' study of our past records of ships mentioned, to formulate a proper reply; yet there still exist ample opportunities for structural errors affecting tolls bills, not covered in his communication or our reply, which fact was stated.

"Another case involved a question of veracity between the master of a Greek ship and the boarding admeasurer. The former, endeavoring to hide what he feared would be considered a dereliction of duty, wrote his owners he had removed all 'packings' around tonnage openings prior to arrival, while the lat-

**Table II**  
**Analysis of Variations in Tonnages and Tolls by**  
**Panama and U. S. Rules**

Gross tonnage by Panama canal rules, tons.....	482,317
Gross tonnage by United States national rules, tons.....	429,069
Excess of Panama gross tonnage over United States national gross tonnage.....	56,248
United States national gross tonnage in per cent of Panama canal gross tonnage.....	88.34
Net tonnage by Panama canal rules, tons.....	336,881
Net tonnage by United States national rules, tons.....	269,320
Excess of Panama net tonnage over United States national net tonnage.....	67,561
United States national net tonnage in per cent of Panama canal net tonnage.....	79.95
Amount tolls figured at \$1.25 per ton for loaded and \$0.75 per ton in ballast on United States national net tonnage.....	\$317,902.00
Amount tolls at \$1.20 per ton loaded and \$0.72 per ton in ballast Panama rules.....	\$382,758.00
Difference between amount as per Panama tonnage and United States national tonnage.....	\$64,856.00
Net tonnage by United States national rules—ships with cargo, tons.....	231,824
Net tonnage by United States national rules—ships in ballast, tons.....	37,496
Net tonnage by Panama canal rules—ships with cargo, tons.....	292,091
Net tonnage by Panama canal rules—ships in ballast, tons.....	44,790
Amount of tolls at \$1.20 on Panama canal tonnage—ships with cargo.....	\$350,509.20
Amount of tolls at \$1.20 on Panama canal tonnage—ships in ballast.....	\$54,248.80
Amount of tolls at \$1.25 on United States national tonnage—ships with cargo.....	\$289,780.00
Amount of tolls at \$0.75 on United States national tonnage—ships in ballast.....	\$28,122.00
Difference in amount Panama and national—ships with cargo.....	\$60,729.20
Difference in amount Panama and national—ships in ballast.....	\$4,126.80
Total amount of cargo carried, tons.....	377,470
To distribute the above differences as per Panama canal and national rules, per net ton of Panama canal measurement for ships with cargo and in ballast	
Actual difference in dollars—loaded.....	60,729.20
Then — Total Panama net tons loaded.....	292,091
Actual difference in dollars in ballast.....	4,126.80
— Total Panama net tons ballast.....	44,790
Then — $\frac{60,729.20}{292,091} = \$0.208$	
Actual difference in dollars in ballast.....	4,126.80
— $\frac{4,126.80}{44,790} = \$0.092$	
Total Panama net tons ballast.....	44,790

ter's records evidenced the fact that this was not true and that all knowledge of the significance of such use was supplied him by his agent. Such incidents are unfortunate and most emphatically disrupt the pleasant relations which should be proverbial at Canal Zone ports."

The accompanying table, compiled from the *Canal Record* and from the government's official register tonnage of ships, lists only the American ships which passed through the canal during the three weeks Oct. 7 to 28, 1922. The record gives their gross and net tonnages according to United States and Panama canal rules, tons of cargo carried and tolls figured on basis of United States and Panama measurements. From this table the determining factor in the levy of tolls is shown to be the United States net register tonnage multiplied by \$1.25 for ships with cargo and by \$0.75 for ships in ballast. The Panama tonnage is almost invariably considerably higher.

#### Would Lower the Ton Rates

From Table I, the results given in Table II for the 73 American ships transiting the Panama canal during the period Oct. 7 to 28, have been compiled.

Thus calculated on the actual transit of 73 American ships of all types as they happened to come during the three weeks Oct. 7 to Oct. 28, the canal tolls now in force would have to be reduced by (using nearest cent) to 21 cents per ton of Panama canal tonnage for loaded ships and reduced by 9 cents per ton of Panama canal tonnage for ships in ballast. The reduced tolls would be 99 cents per ton for ships with cargo and 63 cents per ton for ships in ballast in order not to exceed the maximum charges now collectible according to the act of congress of Aug. 24, 1912. These

figures are of course merely an average over a short period and would probably be modified slightly if a similar analysis were made over a space of six months or a year.

The extra amount per ton of cargo carried were tolls levied as per the Panama rules may be calculated by dividing the difference in amount of tolls as per Panama and United States national rules, by the number of tons of cargo carried. From Table II

$$\frac{\$60,729.20}{377,470} = \$0.16.$$

In this study, some interesting and astonishing differences in the register net tonnage of sister ships have been disclosed. For instance, the freighters MUNAIRES and AGWISTAR have both made transit of the canal during the period under consideration. The following particulars of the two ships as taken from the latest records of the Panama canal, Lloyd's Register and the bureau of navigation, are instructive:

	S. S. Munaires	S. S. Agwistar
Length, feet.....	370.0	370.0
Beam, feet.....	53.1	53.1
Depth, feet.....	30	30
Deadweight, tons.....	7300	7300
Speed, knots.....	11	11
Built.....	1917	1919
U. S. Gross, tons.....	4620	5229
U. S. Net, tons.....	2866	3893
Panama Canal Gross, tons.....	5577	5523
Panama Canal Net, tons.....	4225	4203
Tolls @ \$1.20 Panama Net.....	\$5070.00	\$5043.60
Tolls @ \$1.25 U. S. Net.....	\$3582.50	\$4866.25

As the charges for transit through the canal can not exceed \$1.25 per net United States register tonnage, the MUNAIRES on this basis paid \$1283.75 less than the AGWISTAR. Now these two ships are identical as they were built from the same lines and plans in the same shipyard. In the particulars listed above, the Panama canal tonnage ratings for

the two ships agree closely and the AGWISTAR is actually slightly less.

What is the reason for this extremely large variation in United States register tonnage of these two sister ships? In the original admeasurement of these ships immediately upon their completion, their gross and net United States register tonnage compared as closely as could be expected. Some time after their completion, the United States rules for admeasurement of vessels were so interpreted (in order to equalize American tonnage with that for similar foreign ships) that by cutting tonnage openings, as referred to above, in bridge and poop space bulkhead doors, the bridge and poop space would on request for remeasurement be excluded from tonnage.\*

#### Rules Should Be Known Thoroughly

Some steamship companies, for one reason or another, have not applied for this remeasurement. But the example clearly points to the importance of thorough and up-to-date knowledge of the application of measurement rules, on the part of those who are entrusted with the operation of ships, in the general striving for economy.

Another interesting radical variation in tonnage is in the case of the two practically sister ships, combination ore and oil carriers, MARORE and BETHORE each capable of carrying a cargo of 20,000 tons. The following particulars have been prepared:

	S. S. Marore	S. S. Bethore
Length, feet.....	559.3	550.0
Beam, feet.....	72.2	72.0
Deadweight, tons.....	20,900	20,600
U. S. Gross Tonnage.....	7,921	14,899
U. S. Net Tonnage.....	4,396	9,615
Panama Canal Gross Tonnage.....	15,551	15,476
Panama Canal Net Tonnage.....	4,297	11,102
Tolls @ \$1.20 Panama Net.....	\$5,156.40	\$13,322.40
Net.....	\$5,495.00	\$12,018.75

The MARORE can transit the canal when loaded for \$6862.35 less than the BETHORE. During the period under consideration, the MARORE passed through the canal with 20,000 tons of cargo with tolls based on her Panama canal net tonnage of \$5156.40 while the BETHORE came through in ballast with tolls amounting to \$7211.25. In other words, the BETHORE must pay \$2054.85 more to go through in ballast than the MARORE does fully loaded.

Ore is a very dense cargo and occupies relatively small cubic, consequently both these ships as they are expressly designed

\*Capt. C. C. Oakes, marine superintendent of the Ward line, writes that the AGWISTAR recently paid Panama canal tolls on a net tonnage of 2957.32 and that the same measurement applied to this ship in April and July when passing through the canal. The tonnage figures used above in the comparative table were taken from the Panama Canal Record of Oct. 25, 1922, and from the latest reports of the bureau of navigation and Lloyd's register of shipping.



for carrying ore have extremely large double bottoms and side tanks. In the case of the BETHORE, these tanks are fitted to carry oil in bulk while in the MARORE, though they could be so fitted if desired, these tanks serve merely for ballast and consequently are not included in the tonnage. Here it comes down to the question of whether the prospects of oil cargo back would make it economical to fit the tanks for oil and thus so greatly increase her official tonnage.

An attempt has been made in this article to demonstrate the essential

clumsiness and source of irritation, confusion and uncertainty in the present dual standards of levying tolls at the Panama canal. The Panama rules for measurement are founded on a thorough and logical study of the subject of measurement. Tolls levied on the tonnage as obtained by these rules would be based upon a single clear definite standard for all ships.

The amount of tolls for transit of the canal, as indicated were fixed with the two objects of attracting business and of making the canal self-supporting. There-

fore, if it has been found that the tolls now received are, or in the near future will be, sufficient for the purpose for which they are levied, it would be sound to reduce the present rates based on Panama canal tonnage to some such figure as arrived at above. This, of course, would mean an equivalent income, a single standard of measurement and no increase in charges for the shipowner.

But shipowners can save money now by thoroughly studying the present rules and taking full advantage of the opportunities offered under them.

## Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to Dec. 12, 1922, on Future Loadings

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo	Finished steel	From North Pacific Ports to	Lumber
					cu. ft. 100 lbs.			Per m. ft.
Liverpool.....	3 Sh.	\$0.35	\$0.20	\$0.19	\$0.30	\$0.60	San Francisco.....	\$6.50 to 7.00
London.....	3 Sh.	0.35	0.20	0.19	0.30	0.60	South California.....	7.50 to 8.00
Christiania.....	\$0.20	0.40	0.47½	0.25	0.37½	0.85	Hawaiian Islands.....	10.00 to 10.50
Copenhagen.....	0.20	0.40	0.47½	0.25	0.42½	0.80	New Zealand.....	12.50 to 15.00
Hamburg.....	0.15	0.20	0.25	0.18	0.37½	0.75	Sydney.....	12.50 to 15.00
Bremen.....	0.15	0.20	0.40	0.18	0.37½	0.75	Melbourne-Adelaide.....	13.00 to 15.00
Rotterdam.....	0.16	0.25	0.25	0.20	0.35	0.70	Oriental Ports.....	10.00 to 11.50
Antwerp.....	0.15	0.27½	0.22½ to 0.37½	0.20	0.35	0.70	Peru-Chile.....	15.00 to 18.00
Havre.....	0.18	0.40	0.22½	0.23	0.40	0.75	South Africa.....	19.00 to 20.00
Bordeaux.....	0.18	0.40	0.37½	0.23	0.40	0.75	Cuba.....	17.00 to 18.00
Barcelona.....	0.20	0.60	0.50	7.00T	—20.00T—	7.00T	United Kingdom.....	90s
Lisbon.....	0.21	0.60	0.50	7.00T	—20.00T—	7.00T	United Kingdom (ties).....	70s
Marseilles.....	0.20	0.55	0.50	5.60T	—20.00T—	7.00T	Baltimore-Boston range.....	15.00 to 17.00
Genoa.....	0.21	0.60	0.35	0.30	0.40	0.80	Baltimore-Boston range.....	(ties) 14.00 to 16.00
Naples.....	0.21	0.60	0.35	0.30	0.40	0.80	Buenos Aires.....	17.00
Constantinople.....	22 to .25	15.00T	0.75	0.30	—20.00T—	8.00T	Flour and Wheat	
Alexandria.....	22 to .25	15.00T	0.75	0.30	—20.00T—	8.00T	Oriental Ports.....	\$ 5.00
Algiers.....	0.25	0.60	0.50	0.30	—16.00T—	8.00T	U. K. and Continent.....	37½ to 40sT
Dakar.....	14.60T	17.00T	17.00T	15.00T	—17.00T—	11.25T	Scandinavia.....	42½ to 45sT
Capetown.....	10.50T	17.00T	17.00T	15.00T	—20.00T—	11.25T	Mediterranean.....	42½ to 45sT
Buenos Aires.....	.....	.....	.....	.....	—21.00T—†	6.00T†	West Coast Italy.....	40s to 42½T
Rio de Janeiro.....	.....	.....	.....	.....	—23.00T—†	6.00T†	Steel	
Pernambuco.....	.....	.....	.....	.....	—20.00T—†	8.00T†	Oriental Ports.....	\$5.00T
Havana.....	0.17½*	0.37½*	.....	0.17½*	0.47* 0.94*	0.20*	Cotton	
Vera Cruz.....	0.45	.....	.....	0.20	0.52½	1.05	Oriental Ports.....	35c to 50c per cwt
Valparaiso.....	.....	0.40	.....	0.56	0.45	0.80	Apples	
San Francisco.....	.....	.....	.....	.....	20.00 to 25.00	11.50	United Kingdom.....	90 cents per box
Sydney.....	.....	16.00T	.....	.....	—16.00T—	10.00T	Copper	
Calcutta.....	.....	.....	.....	.....	.....	.....	Oriental Ports.....	\$5.00

T—Ton.

†Landed.

††Heavy products limited in length.

\*Extra charge for wharfrage.

### Principal Rates To and From United Kingdom

	s	d
Grain, River Plate to United Kingdom.....	25	0
Coal, South Wales to Near East.....	13	6
Coal, Newcastle to France.....	6	6

	s	d
Coal, South Wales to Buenos Aires	14	6
Iron ore, Bilbao to Middlesbrough.	7	3
General British market, six months time charters, per ton per month	4	6

### Bunker Prices

At New York			
	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 9, 1922	\$5.50 @ 5.90	\$1.25	5.50 cents
April 6.....	5.30 @ 5.90	1.16½	4.75 cents
July 1.....	8.10	1.26½	4.75 cents
Oct. 13.....	8.55	1.45	5.50 cents
Nov. 10.....	8.05	1.615	5.125 cents
Dec. 12.....	7.90	1.45	4.75 cents

At Philadelphia			
	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 9, 1922	\$5.10 @ 5.35	\$1.50	5.00 cents
April 10.....	5.90 @ 6.25	1.05	4.25 cents
July 1.....	8.00	1.15	4.25 cents
Oct. 13.....	8.30	1.47	5.00 cents
Nov. 15.....	7.30	1.61½	5.00 cents
Dec. 12.....	7.50	1.51½	5.10 cents

Other Ports	
Boston coal, per ton	\$9.33
Boston, oil, f. a. s., per barrel	\$1.38
Hampton Roads, coal, per ton	9.00
Seattle, coal, per ton	7.50
Cardiff, coal, per ton	19s
London, coal per ton	22s
Antwerp, coal, per ton	22s

# Demand Repayment of War Risks

Attempt To Recover Marine Premiums of 1914  
to 1917 from Germany Not Without Its Dangers

**M**ARINE insurance offices report that during the past few weeks many requests have been received from their assureds for statements showing war risk insurance premiums paid on shipments prior to the entry of the United States into the war. An attempt is being made to recover these premiums from the German government. The flood of requests for information has resulted in a great deal of extra work in underwriting offices.

Although they are complying with the wishes of their clients, a number of underwriters question the advisability of claiming a refund of premiums because it might prejudice the rights of subrogation of the insurance companies in their claims against the German government for the value of vessels and property destroyed during the war. The foundation for this contention is that if the German government refunds war risk premiums and subsequently the assured seeks to recover property destroyed the German government will claim that the assured are in no way out of pocket, for the insurance company has paid the loss and the government has refunded the premium.

The question is considered by marine underwriters to be an important one and is being carefully studied. Those attempting to bring about the refund are making their charges for services on a contingent basis and consequently those who paid war risk premiums from August, 1914, to April, 1917, feel that they have nothing to lose by furnishing the desired information.

\* \* \*

## Market Brisk, Rates Cut

**U**NDERWRITERS report that business has been more active during the past month but that the pick up is probably only seasonal. At this time of year, it is pointed out, a good deal of merchandise is in transit and it is reflected in the premium volume. To a certain extent, the increase in premiums is being offset by the practice of rate cutting which is flagrant. This condition is blamed upon certain offices which are said to be desirous of obtaining the largest possible volume of business upon their books before the end of the statement year. They wish to make a good showing for 1922 and then, it is supposed, after

the first of the new year, they will cancel a large part of their liability before the flood of claims begin. Rates are said to have been slashed on coffee shipments from the interior of Colombia. London is the prime mover in reducing the rates but several offices in this country have not been slow to follow the example.

\* \* \*

## Outrule General Average

**D**ECISION of special interest to marine underwriters was handed down recently in the *MARY F. BARRETT* case, *Federal Reporter* 618. It is held that when the necessity for sacrifice is caused by the negligence of the master or crew there is no application of the doctrine of general average. Before the Harter act was passed, shipowners were unable to contract to relieve themselves of liability for the negligence of master or crew. The act exempts vessels from liability for losses due to errors of navigation, but does not entitle them to general average contributions for losses resulting. In the absence of a stipulation in the charter entitling the ship to general average contributions on this account, a stipulation authorized under the Harter act, the vessel can not on a libel for part of the cargo jettisoned because of the stranding of the ship resultant from errors of navigation, interpose the right to general average as a defense *pro tanto*.

\* \* \*

## Study Repair Duty Clause

**M**ARINE insurance underwriting associations are concentrating attention upon the question of underwriters' liability for the 50 per cent duty provided for in the new tariff act on repairs made abroad to vessels belonging to the United States. Underwriters have held a number of meetings at which the subject has been predominant and are in receipt of a request from the Institute of London Underwriters asking that American underwriters comment on the law and state their opinion as to whether the 50 per cent duty would be claimable under hull policies. Legal advice is being sought on this question.

The section of the law which provides the 50 per cent duty on repairs made abroad is held to be ambiguous

and before the insurance men and owners can determine to what extent duty is payable a ruling is necessary to clearly define the meaning of "stress of weather or other casualty," upon which the duty is based. The section does not provide for a vessel that is able to reach a foreign port but must undergo certain repairs before it is able to return, but simply states that the duty will be refunded on such repairs as are necessary to secure the safety of the vessel to reach her port of destination.

\* \* \*

## Urge Close Co-Operation

**A**N APPEAL for greater co-operation between claim settlers and average adjusters was made a few days ago by J. P. Nelson, retiring president of the Association of Average Adjusters of the United States. Mr. Nelson said that the fact is sometimes forgotten that both have the same object in view, the reimbursing of an owner who has suffered a loss to the extent to which he may be entitled to reimbursement. Some, said Mr. Nelson, seem to think that their duty is to find means to avoid payment and for some reason owners of tank vessels seem to be singled out for suspicion. Although some claims involve complicated problems, it does not make the claim any more dishonest and the tendency on the part of some adjusters to approach all such claims with suspicion is to be deplored, he said.

\* \* \*

## Insurers Abroad Suffer

**C**OMPARED with marine underwriting conditions abroad, domestic companies may well consider themselves well off and the past 12 months satisfactory. While it is too soon to make any predictions as to the results of the year's underwriting experience, foreign underwriters are known to have been through a period that might well be described as a crisis. How they have made out is shown by the unusual number of failures and retirements.

In Norway and Sweden conditions have been thoroughly bad while British underwriters are reviewing their 3-year accounts with anxiety and little hope of an even break. Losses incurred in 1922, however, are said to have been less than during the last



few years. In Germany, however, business is said to have been generally satisfactory. Most of the companies have made a profit on their inland business but have suffered losses on their hull underwriting.

\* \* \*

## New Company in Norway

**D**ESPITE the disastrous experience of Norwegian insurance companies writing marine business, a new company is being organized in that country by Alf. L. Whist, former head of the Whist group of companies and the Norske Lloyd, which suspended payment recently. Mr. Whist has succeeded in enlisting the sympathy of the Norwegian department of state which has issued a statement saying the creation of another company in Norway is desirable in order to prevent Norwegian risks going abroad on account of the contraction of the Norwegian market.

\* \* \*

## Two Companies in Merger

**P**LANs for the merger of the Washington Marine Insurance Co. and the United States Lloyds are reported to have been practically completed and the necessary approval received from the New York state insurance department. By the transaction, the United States Lloyds will secure the extensive business of the Standard Tobacco Co. The assets of the Washington Marine are about \$360,000 and this sum will go into the surplus of the absorbing company.

\* \* \*

## Broader Scope Is Likely

**T**HE success of many British insurance companies is ascribed to the fact that they are not restricted to writing certain covers and in handling all kinds of business are able to show a profit in the aggregate.

In the United States, laws prevent companies writing multiple coverage and consequently an insured desiring complete protection is obliged to apply to several different companies to meet his needs. If he goes to a foreign company he can obtain a general policy covering him against all risks, generally at a lower rate than is obtainable when he has to go to several companies.

The situation has long been a source of complaint among domestic companies and an effort to relieve them has at last been started in New York state, where the new superintendent of insurance has declared himself in favor of domestic marine insurance companies writing all branches of insurance with the exception of life. The superintendent called the repre-

sentatives of all lines of insurance before him recently and told them that he was willing to have them submit plans with a view to broadening their coverage. The special committee has been instructed to prepare a general survey of the situation and report back at a general meeting, at which not only the insurance companies will all be represented, but chambers of commerce and business and shipping organizations will be invited.

As New York is regarded as the pivot state in insurance and its example generally is followed in others, its action on the question of multiple line insurance companies is being watched with particularly keen interest. The present movement toward the modification of the existing laws has been brought to a head by competition with London Lloyds and other foreign insurers.

\* \* \*

## Special Agreement Legal

**A**CCORDING to a decision handed down in the United States district court of Maryland, words interlined in existing forms must have full effect, even though this necessitates a rejection of uncanceled provisions of the original draft. This applies to fluctuating rates of exchange if a definite settlement has been written in.

In the action, policies had been issued by several British insurance companies on forms in which a loss was made payable in pounds sterling, but at a time when the rate of exchange between British and American money was fluctuating. A clause was written into the policy that all claims should be settled at \$4.75 to the pound, and at that rate premiums had been paid. The court held that such a clause must be given the effect intended and that for a broker on a loss to accept a lower exchange rate is tantamount to receiving less than the full payment of the loss and so exceeds his legal authority.

\* \* \*

## Judgment Not Insured

**A** MARINE insurance court decision likely to have a far reaching affect has been handed down in England by Justice Rowlatt in the high court of justice, King's bench division. The court held that a marine insurance company does not insure against mistakes of judgment by a ship's captain. A claim of \$15,000 for damage done to a cargo of rosin damaged when the captain of the vessel thought the hold was on fire and seeing smoke he increased the pressure of steam into the hold

to put out the fire which did not exist. The case was dismissed by the judge who held that:

"On the evidence he had come to the conclusion that there was no fire. Rosin easily gives off dust which is highly explosive and also gives off an explosive vapor but there was no objective symptom of a fire in the hold. The theory put forward was that the fumes which were seen had been caused by a broken pipe heating the rosin. He accepted that theory and the damage was then much increased because the captain turned high pressure into the hold to extinguish a fire which he believed to exist. The marine insurance act does not justify one in saying that there is a peril when there was only a mistaken, though reasonable, belief in the existence of the peril. He, therefore, held that this was not a general average loss. Even if it were a general average loss he would still hold that the defendants were not liable because under this insurance the plaintiffs could only recover if there was a fire."

\* \* \*

## War Clause Is Amended

**A**S a result of a recent decision, marine underwriters have amended the regular war clause to apply to the seizures of property by de facto governments. The new clause reads:

"Including direct loss and/or damage caused by strikers, locked-out workmen or persons taking part in labor disturbances, riots, civil commotions or explosions, the result of unlawful acts, but not withstanding anything to the contrary, either expressed or implied herein, or in the policy to which this endorsement is attached, this insurance does not cover and is hereby warranted to exclude claims for delay, deterioration or loss of market, or for the confiscation or destruction by the government, and/or de facto government, of or within the country in which the property is situated and/or government and/or government of seceding or revolting states."

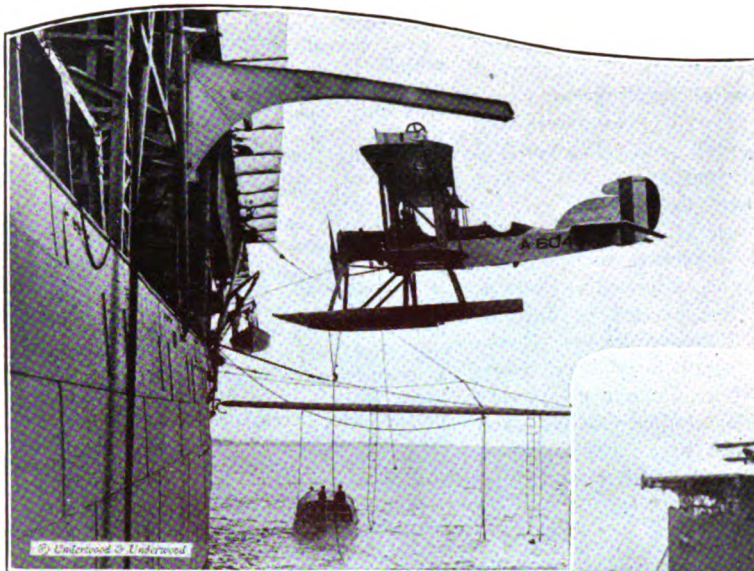
\* \* \*

## Bill Fails of Passage

**T**HE board of underwriters of New York, representing the marine insurance interests and supporting the Husted bill, which would enable private suits to be brought against the federal government to recover damages incident to shipping losses, was notified by the committee of the judiciary of the house of representatives that the bill probably would not be reported out of the committee for action during the recent session. The Husted bill was introduced about two years ago. Lately, strenuous efforts have been made to induce the committee to take some action following the summer recess, but all attempts were of no avail. With the use of the courts barred to them, marine underwriters are able to recover only through the passage by congress of an act authorizing the treasury to expend the sum asked for.

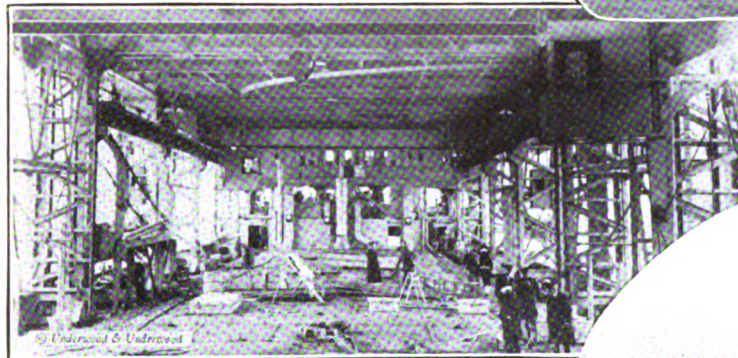
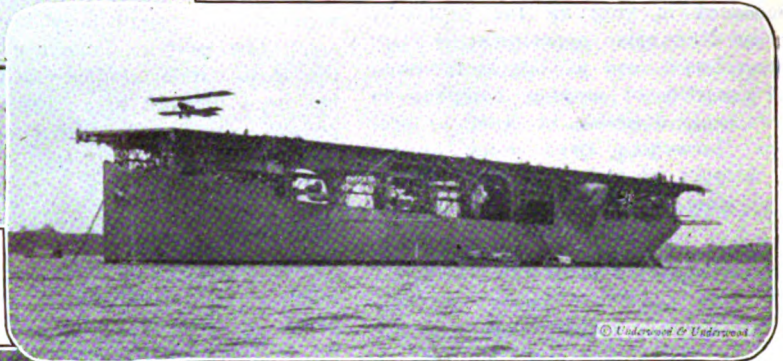


# Photographs from Far and Near



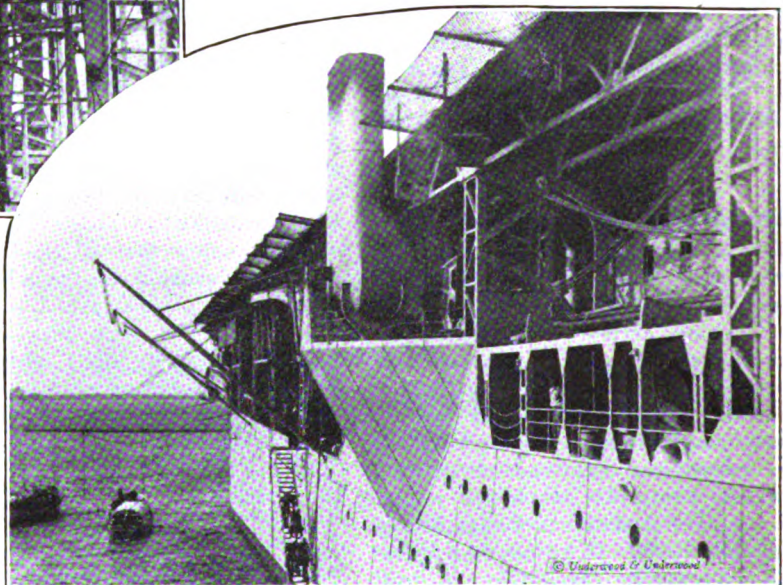
Seaplanes are launched by means of a catapult, and after landing are hoisted to the deck with a crane

Experiments have been carried out successfully with the United States navy's new type of airplane carrier, Langley. The entire landing and launching deck of the Langley is cleared free of all obstructions in a few seconds. Even the smokestack rolls out of the way, when a plane is landed or launched. An airplane can be launched in 2 1/5 seconds while at sea



Interior of the Langley, underneath the flying and landing deck, showing where the airplanes are kept. They are hoisted to upper deck on an elevator

The airplane has a smooth runway, the entire length of the ship, for launching or landing



The Langley's smokestack is constructed to be rolled over, below the surface of the deck, when an airplane is being launched. The nets afford protection to those on the upper deck



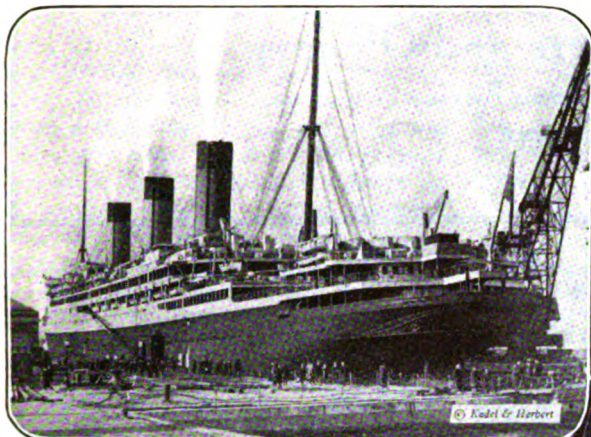
toria, B. C., in 87 days, accompanied by his wife, who is a Chinese woman, their son, and a crew of three Chinese seamen

Capt. George Waard, former British Columbia sealer, built the 23-ton junk Amoy, and sailed her from Shanghai to Victoria, B. C., in 87 days, accompanied by his wife, who is a Chinese woman, their son, and a crew of three Chinese seamen



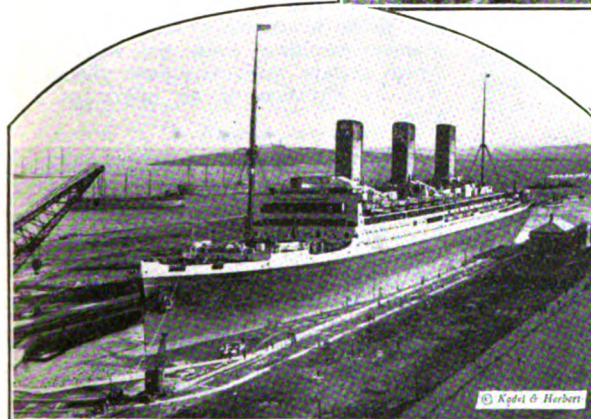
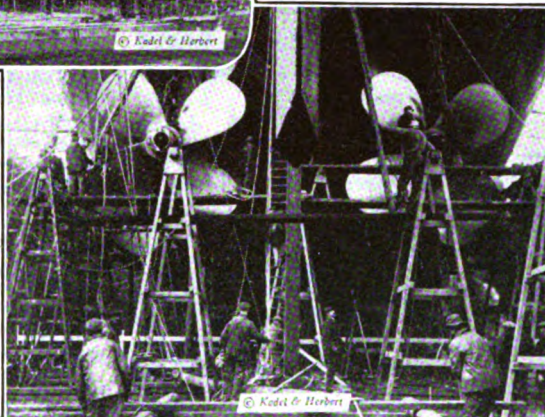


# Latest Marine News in Pictures

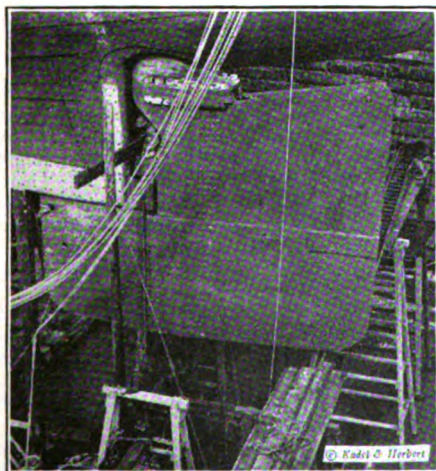
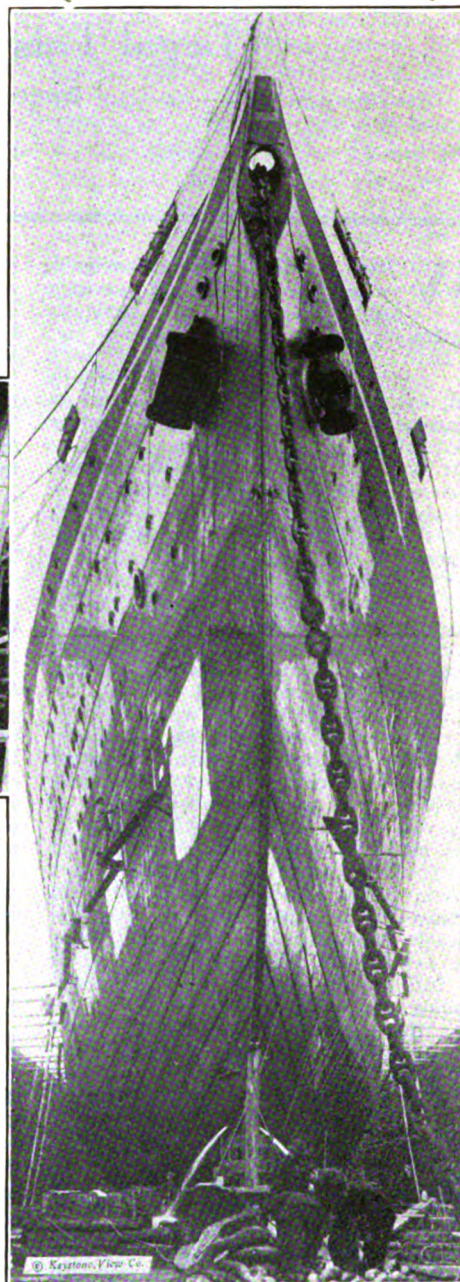


The Majestic in drydock at Boston is shown receiving a new coat of paint. This is how the ship appears when viewed close up. At the left is an unusual view of the liner entering the dock

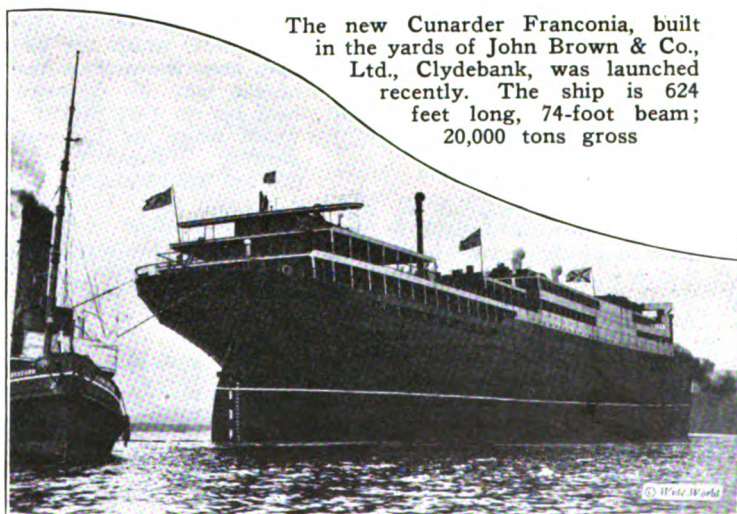
An impression of the size of the Majestic can be obtained from the bow and stern views, these photographs being taken at Boston. The huge propellers were taken off and replaced by new ones of different size



The Majestic in Boston's big naval drydock—the world's largest steamship in the world's largest drydock



The Majestic's rudder. Contrast its size with the workman on the scaffolding at the right



The new Cunarder Franconia, built in the yards of John Brown & Co., Ltd., Clydebank, was launched recently. The ship is 624 feet long, 74-foot beam; 20,000 tons gross



# Late Decisions in Maritime Law

## Legal Tips for Ship Owners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

WHERE death upon navigable waters follows from a maritime tort committed on navigable waters within a state whose statutes give a right of action on account of death by wrongful act, the admiralty courts will entertain a libel *in personam* for the damages sustained by those to whom such right is given. The subject is maritime and local in character, it was said in the case of *Western Fuel Co. v. Garcia*, 42 *Supreme Court Reporter*, 89, and the specified modification of or supplement to the rule applied in admiralty courts when following the common law, will not work material prejudice to the characteristic features of the general maritime law, nor interfere with that proper harmony and uniformity of that law in its international and interstate relations. The question of when state or maritime law is applicable was again considered by the Supreme Court in the case of the state industrial commission of the State of New York v. *Nordenholt Corp.*, 42 *Supreme Court Reporter* 473, where it was held that when an employee working on board a vessel in navigable waters sustains personal injuries there and seeks damages from the employer, the applicable legal principles are very different from those which would control if he had been injured on land while unloading the vessel. In the former situation, the liability of the employer must be determined under the maritime law; in the latter, no general maritime rule prescribes the liability, and the local law has always been applied. The liability of the employer for damages on account of injuries received on shipboard by an employee under a maritime contract is matter within the admiralty jurisdiction, it was said, but not so when the accident occurs on land. The court then held specifically that where a longshoreman engaged in unloading a ship in the port of New York received injuries while he was working on the dock, an extension of the land, the liability of the employer for his death is governed by the local law, and his dependents are entitled to compensation under the New York workmen's compensation law.

The American law regarding the right to recover for prepaid freight in case of frustration of the voyage is different from that prevailing in Great Britain, it was said in the case of *PEHR UGLAND*, 271 *Federal Reporter* 340, and prepaid freight can be recovered, and no right of recovery exists on the part of the ship against the cargo owner for such freight, when not paid. The American authorities hold that in the absence of stipulation to the contrary, a shipper may recover prepaid freight money, from the mere failure to transport and deliver

the cargo, regardless of the reasons therefor. In this case it was decided that a ship chartered to carry a cargo of coal from a United States port to a port in South America, which loaded the cargo, issued a bill of lading, and was paid the freight in advance, but which on proceeding to sea proved unseaworthy and abandoned the voyage, was liable to the charterer for the freight prepaid.

In the absence of a provision fixing lay days, a charterer is required only to load with due diligence, and the diligence is to be determined by the conditions which affect the work of loading. "For instance," said the court in the case of *LEVI W. OSTRANDER*, 271 *Federal Reporter* 406, a strike of laborers engaged in loading may be of such a nature as to excuse the character for delay. But no such conditions attended the work of loading in the present case. There was no strike of stevedores, and no impediment to a diligent delivery of the cargo. \* \* \* The rule of reasonable diligence applies only to the actual loading, and does not excuse for a failure to have a cargo ready to load.

"A tug, in her home waters, is chargeable with knowledge of the ordinary currents, channels, depth of water, or obvious, well known obstructions. The one fact of injury to the tow raises no presumption of fault. A mere mistake in judgment in respect to the tides or currents, channels, depth of water, or obstructions is not sufficient to charge the tug with negligence, for the error must be one that a prudent navigator, sailing under similar circumstances and conditions would not have made. The tug is bound to act and avoid, so far as reasonable care and skill can do it, dangerous points in navigation upon the voyage undertaken, which are known or should have been known to a master in charge of the tug. To do more would be to hold her to that degree of care which would make the tug responsible as an insurer. Navigators are not to be charged with negligence unless they make a decision which nautical experience and good seamanship would condemn as unjustifiable at the time and under the circumstances shown."—*W. H. BALDWIN*, 271 *Federal Reporter* 411.

"The provisions of the Harter act", said the court in the case of *PEHR UGLAND*, 271 *Federal Reporter* 340, "cannot be relied upon to relieve the shipowner from the obligation to furnish a seaworthy vessel, or to escape from responsibility for failure so to do; and

especially is this true when the unseaworthiness existed at the time the charter party was entered into. Nor can the owner escape liability by the exercise merely of due diligence to perform his obligations in this respect. His duty was to furnish a seaworthy vessel, and by frequent examinations and thorough inspection to see that it was so maintained, having regard to the service to be performed; and this obligation becomes the more imperative where an old and not thoroughly strong and well equipped vessel is in use."

"The rules of law which govern the relationship between master and servant on land," it was said in the case of *Crockett v. Brandt*, 271 *Federal Reporter* 415, "are not applicable to seamen. From early times, they have been considered a peculiar class, and unusual protection has been extended to them." However, the court held that the owner of a vessel is not liable in damages for injury to a seaman resulting from the manner in which certain work was done, though it was by direction of an officer of the ship.

While a captain of a vessel has authority, under the provisions of Section 4511, revised statutes of the United States, to hire and discharge seamen, where he wrongfully discharges men without taking them before the shipping commissioner, as required, the discharge though illegal is not void, but releases the men from their obligations to the vessel and entitles them to recover the penalty for wrongful discharge prescribed by Sections 4527, 4529, of the revised statutes.—*INLAND*, 271 *Federal Reporter* 1008.

Consent by the owner of a wharf to the keeping of a fire under the boilers of the barge, sunk alongside the wharf, to operate the barge's pumps, does not give implied authority to maintain such fires when the wind made it dangerous to the wharf, or establish assumption of risk to the wharf of fire caused by sparks from the barge. "The pumping operations were for the benefit of all," declared the court in the case of *WEST POINT*, 271 *Federal Reporter* 502. "They were not only for the benefit of the petitioners and the claimant, but for the benefit of any ships which had occasion to use the dock, or for those who were to be supplied with coal from the wharf." It was further said, "It can not be contended that, if a vessel anchored in the dock for the purpose of delivering coal, and should take fire by sparks from the barge, a recovery would be prevented by the fact that the pumping operations were for its benefit."

## Committee Begins Work on Standardization

At an informal conference on standardization in shipbuilding and ship operating of the various organizations in the marine field held in New York on Nov. 10, the decision was made to appoint a committee on plan and scope and ways and means as a preliminary to a permanent organization. Col. Edward A. Simmons, president of the American Marine association and chairman of the conference, has appointed the following:

E. H. Rigg, representing the Society of Naval Architects and Marine Engineers.

Capt. W. M. McFarland, representing the American Society of Mechanical Engineers.

Charles F. Bailey, representing shipbuilders for machinery.

Hugo P. Frear, representing shipbuilders for hull construction and hull fittings.

W. F. Gibbs, representing the American Steamship Owners' association.

Capt. John F. Milliken, representing masters, mates and labor organizations.

Commander R. D. Gatewood, representing the United States shipping board.

Admiral J. K. Robison, representing the bureau of engineering, navy department.

Gen. George Uhler, representing the steamboat inspection service.

Capt. C. A. McAllister, representing the American Bureau of Shipping

Admiral J. D. Beuret, bureau of construction and repair, navy department.

The first meeting of the committee was planned in the office of Secretary Herbert Hoover of the department of commerce on Dec. 20.

## To Sell Hog Island, Bids To Close Jan. 30

Hog Island is to be sold. Sealed bids are to be opened Jan. 30, 1923, according to an announcement made by Sidney Henry, director of sales of the Emergency Fleet corporation. Notice is given this far in advance on account of the great value of the property and the desire of the shipping board to give opportunity to those that may be interested in its purchase, to make the necessary financial arrangements. It has been evident for a long time that this property would not again be called on for shipbuilding purposes but that its real value lay in its commercial development as a terminal and manufacturing site, Mr. Henry said. The board has disposed of the surplus materials which were stored at Hog Island and is prepared to offer the real estate and improvements.

The property contains 950 acres of land and in connection with the shipbuilding program this land was

graded, the water front dredged, roads constructed from end to end, an elaborate trackage system installed, and the water front, which extends for about two miles, is equipped with piers for use as a terminal. There are seven piers each 1000 feet in length and 100 feet in width, equipped with cranes. Buildings include a large modern concrete warehouse and several permanent shop buildings of steel construction, in addition to a large number of wooden buildings.

## New Worthington Officers

Changes in the Worthington Pump & Machinery Corp. organization have been announced as follows: E. T. Fishwick, formerly sales manager, has been made vice president in charge of sales to succeed F. H. Jones, vice president, resigned. J. E. Sague, also a vice president, resigned, is succeeded by William Goodman, formerly assistant to the vice president. James C. Barnaby, formerly plant engineer of the Staten Island Shipbuilding Co. now is in charge of certain engineering work in the diesel oil engine division of the Worthington corporation, headquarters of which are at 115 Broadway, New York.

## Change Over to Oil Fuel

Among oil burner contracts recently closed by the Babcock & Wilcox Co., New York, are three for furnishing mechanical atomizing burners for the Scotch boilers of the Bull-Insular Line steamers MARY, EVELYN and MILLINOCKET. Each vessel will have six burners operating under natural draft. The work of converting the vessels from coal to oil burning is being carried out at the yards of the W. & A. Fletcher Co., Hoboken, N. J.

The shipping board has awarded the contract for removing pier No. 5 at Hoboken, N. J., to the Robins-Ripley Co., New York for \$31,242. This pier was destroyed by fire more than a year ago. The contract for dredging the slip thus formed between piers 4 and 6 to a uniform depth of 45 feet has been awarded to Morris & Cummings, New York, for approximately \$60,000. The enlarged slip will accommodate the LEVIATHAN.

The Morris Machine Works, Baldwinville, N. Y., is filling a number of large orders for marine equipment. One of the largest calls for ten 14-inch circulating pumps for the American Ship Building Co., Cleveland. Two similar units are being built for the Toledo Ship Building Co., Toledo, O. These pumps are used for ballast purposes, two to a ship.

## Sets New Record For Crossing Atlantic

A new transatlantic record has been set by the MAJESTIC of the White Star line. She left Ambrose channel lightship at 12.57 p. m. Nov. 25 and passed the buoy off Cherbourg breakwater at 12.10 a. m., on Dec. 1. Allowing 5 hours for the difference in time between New York and Cherbourg, her time was 5 days, 6 hours, 13 minutes. This record voyage was made in ordinary November weather and without hard driving. Due credit should be given to the thorough cleaning and painting and change of propellers while in drydock at Boston. The record just established is 1 hour and 56 minutes better than the best previous record of 5 days, 8 hours and 9 minutes, reported on July 24.

## Merges Engineering Firm

The Atlantic Works, East Boston, Mass., has taken over the Bertelsen & Petersen Engineering Co., also of East Boston, and the business of the latter was discontinued as of Nov. 1 and liquidated. Under the reorganization the officers of the Atlantic Works, are President, Fred McQuesten; vice president, Jen Bertelsen; treasurer and general manager, Alfred E. Cox; agent, Edward P. Robinson; works manager, Paul J. Bertelsen; purchasing agent, Joseph M. Robinson; superintendent, George S. Webster; outside superintendent, Ralph C. Christensen; and assistant superintendent, Carl G. Hedblom.

## Build Big Oil Plant

The Associated Oil Co. is building a \$1,250,000 wholesale distributing plant on the east waterway in Seattle. Construction of the first unit, a wharf 450 feet long and 125 feet wide, is now under way. A 7-acre tract is to be developed, making the Seattle plant the third largest belonging to this company. The first unit will be completed in January.

On Dec. 2, the shipping board had 383 steel cargo and passenger vessels in operation. Of this number, 344 cargo carriers and 27 passenger vessels were under assignment to the traffic department, 9 cargo ships were under bareboat charter to private companies and 1 to the war department, 2 refrigerator ships were assigned to the traffic department.

Plans and specifications are being prepared for reconditioning the ex-German liner PRESIDENT GRANT into a cabin passenger liner for first and third class accommodations.

# Editorial

## Officers and Efficiency

**P**ROGRESS from wood sailing vessels to steel, steam and motor driven ships coupled with the mechanical achievements in communications and all other lines in the last 50 years, have had a marked effect on the type, qualities and character of the men who follow the sea. It is wrong, however, to say that this change is all in favor of the men of old. Capt. Daniel A. J. Sullivan in his paper on "Efficiency of Vessel Operation," reprinted in full on pages 8-10, is emphatic in demanding, in the interest of efficiency, for the present day master the scope, power and authority with corresponding responsibilities, of the old ship master in the days of sail. The captain claims that during the peak of postwar high freights and inefficient operation, the master and officers became in fact nothing but well paid office boys.

It is undoubtedly correct to call for close and full co-operation between shore management and the master and to continue the responsibilities of the latter so that he will broaden and grow and thus be able to use initiative and to render intelligent and effective service when on his own resources. A change in ships from wood to steel and sail to steam with the necessary accompanying changes in methods of management, however, makes it impossible in the very interests of efficiency to try to maintain without change the old duties and responsibilities of the master. These duties and responsibilities in one sense are greater than ever. The value of the property and the number of lives under his care have increased greatly since the days of the sailing ship. He is still supreme and properly so when it comes to the safety of the ship. If anything within his knowledge is wrong with the manner of loading or in the matter or seaworthiness of the ship his word as master is final.

Steamship companies' staffs in home ports or out ports have been established to facilitate the entrance, discharge, loading, fueling, victualing, clearance and dispatch of the ship in her port of call. In all of these duties the master participates and the degree of success of his ship in economy and speed of turn around depends on the closeness with which he co-operates. The present day system of ship operation has grown and been developed as the needs of the trade demanded, always with stress laid on efficiency in turn around. It would be going backward to place under the authority of the master those very duties which it was found from practice better to delegate to officials ashore.

Loading and discharging, in the best organizations, is now in the hands of a capable and energetic former ship master, in the capacity of dock superintendent, actually directing in person this important work. Discharge and loading of bulk cargo has been worked out

to a high degree of efficiency and is taken care of as a matter of routine, the ship taking her turn at the berth and the work carried on with a minimum of lost effort. The fact that a former ship master is always chosen for the shore position of dock superintendent indicates that the present day American ship officer has acquired the knowledge of proper stowage of cargo and the handling of ship's gear and further that he knows how to manage the labor used.

In repairs to the ship, the shore staff functions in complete harmony with the master. The responsibility for the seaworthiness of the ship is borne by the shore staff, supplemented by independent surveyors and the surveyors of the underwriters, the classification societies and the steamboat inspection service. The master and chief engineer are not only at liberty to take part, but are welcomed in conference and their advice is sought in all matters pertaining to the safety of the ship. They can, if they will, become thoroughly versed in the procedure necessary for all repairs to the ship. Economy can and should be practiced by the officers in adopting energetic measures while at sea and in port, to carry out all possible repairs and upkeep with the ship's crew.

The officers of ships today have all the necessary scope and authority with corresponding responsibilities to become real factors in the efficiency of vessel operation. What is needed is good material for officers and thorough training in their duties, experience in a practical way at sea, then recognition of honest intelligent and efficient service performed. When this is done, the officers in this day will not suffer by comparison with those in the days when American ships because of their efficient management and greater speed obtained cargoes in Chinese ports at higher freight rates while their rivals, asking lesser rates, lay idle.

## Congress Should Go to Work

**T**EN months have now gone by since President Harding originally delivered his appeal to congress to help him solve the shipping problem by providing a subsidy, by forcing 50 per cent of the immigrants to use American ships, by making it advantageous for American manufacturers to ship their goods on American ships and by encouraging shipbuilding—an industry seriously crippled by the 10-year stoppage of naval construction. The bill embodying his recommendations represents the united judgment of the country's marine leaders. It offers the best and quickest method of getting the government out of the shipping business. If congress wants to regain the national respect which it has lost by its dilatoriness and incapacity, the shipping bill could and would be disposed of within a week.



# What the British Are Doing

Short Surveys of Important Activities in Maritime  
Centers of Island Empire

THE ministry of labor *Gazette's* November report on shipbuilding gives a gloomy account of industry generally, with a proportion of unemployment reaching as low as 36.3 per cent. At Barrow, it is mentioned, employment was worse in October than September. However here and there are encouraging features. For instance, the returns lately issued by *Lloyds Register* show that more tonnage was commenced in the third quarter of 1922 than in any since the first quarter of 1921. The freight index number of the chamber of shipping continues to fall, and in September stood at 26.7 per cent of the average throughout 1920. This is believed to be the primary influence at work bringing about a larger clearance of tonnage in the third quarter than in either of the two previous quarters. It is pointed out that one-third of the merchant tonnage of the world is now upward of 15 years old, and nearly one-eighth is 25 years old or more. It is hoped that the substantial reductions in the prices of shipbuilding steel will bring about a decided revival and some indication of this is given in the number of orders for ships placed within the past month.

TRIAL recently was made over the measured mile at Skelmorlie, of the oil tanker *BRITISH MERCHANT* built by William Beardmore & Co. for the British Tanker Co. Ltd., intended for oceanwork in connection with the oil

supply at the Persian gulf. The vessel is 10,000 tons deadweight and has 20 compartments for oil in which 9500 tons is accommodated. The length is 440 feet, the breadth 57 feet and draught 26½ feet. The designed speed is 11½ knots, but at the trial 12½ knots were easily obtained.

DURING the last 12 months the El-lerman Lines Ltd. have put into commission a large number of new steamers totalling over 92,000 tons gross. These comprise vessels of all descriptions from cargo to first class passenger steamers. Of the latter, the *CITY OF MAGPUR* recently completed her maiden voyage to Calcutta making the fast time of 26 days. Other vessels are building and some fine types of liners are projected.

AN ORDER for a large turbine driven oil fuel passenger liner, which is to be of 20,000 tons gross, for the Orient Steam Navigation Co., has been placed with Vickers Ltd. The firm was selected from 10 shipbuilders who tendered for the contract.

THE Fairfield Shipbuilding & Engineering Co., Glasgow, has had the honor of receiving the first order placed for two years for a large liner. The contract is by the Steamship Co. of New Zealand, and the vessel will be a quadruple screw vessel 600 feet long, 72 feet beam with a speed of 18 knots. The

vessel will be diesel driven and on its 18-day trip is expected to consume about 1000 tons of oil whereas the coal consumption would be 4000 tons. It is estimated the increased passenger capacity through the substitution of oil will be 18 per cent. The vessel is to be driven by means of four main engines of 3250 brake horsepower each.

CONGESTION has been rather serious lately at the Swansea Docks, according to a report recently presented to the Swansea chamber of commerce. At one time there were 25 boats waiting for berths. Eventually a number of the boats went to other ports. The crowding is attributed to the lack of facilities for the loading of coal and for this it is said the railroads are responsible. Strong representations are being made to the roads to effect an improvement.

WAGE troubles have for the present been amicably settled. In view of the majority of 17,500 against accepting the last reduction of 10 shillings the men appealed to the Shipbuilding Employers Federation not to enforce the reduction, but the shipbuilders expressed their inability either to postpone or modify the reduction. It was pointed out that the cut in wages was solely with a view of getting business and that orders had been accepted on this basis. After further consideration the men accepted this explanation and are now steadily at work.

## Small Tugs Prove Value on Lower Danube

BY DR. ING. VLADIMIR V. MENDEL

ON the lower Danube there is relatively little general cargo traffic and consequently freight rates are seldom quoted. The most usual way is to hire the barges for a whole year, ordinarily from July 1 to July 1. Pre-war rates of this kind of hiring were 5.2 lei (approximately \$1 at normal exchange) per ton per year. Besides it also is usual to hire barges for a given shorter period and sometimes they are hired for a given distance, with the stipulation of a certain amount of days for loading and unloading. The freight charge depends much on the general

EXTRACTS from a letter from Dr. Mendl, who is a naval architect of Braila, Roumania, contain some interesting points on the navigation of the Danube. Dr. Mendl's letter was written after he had read the article appearing in *MARINE REVIEW* in December, 1921, dealing with the river, its canals and traffic. He does not agree with all of the statements contained in that article and supplements it, as far as the lower Danube is concerned, with the information and data now presented.

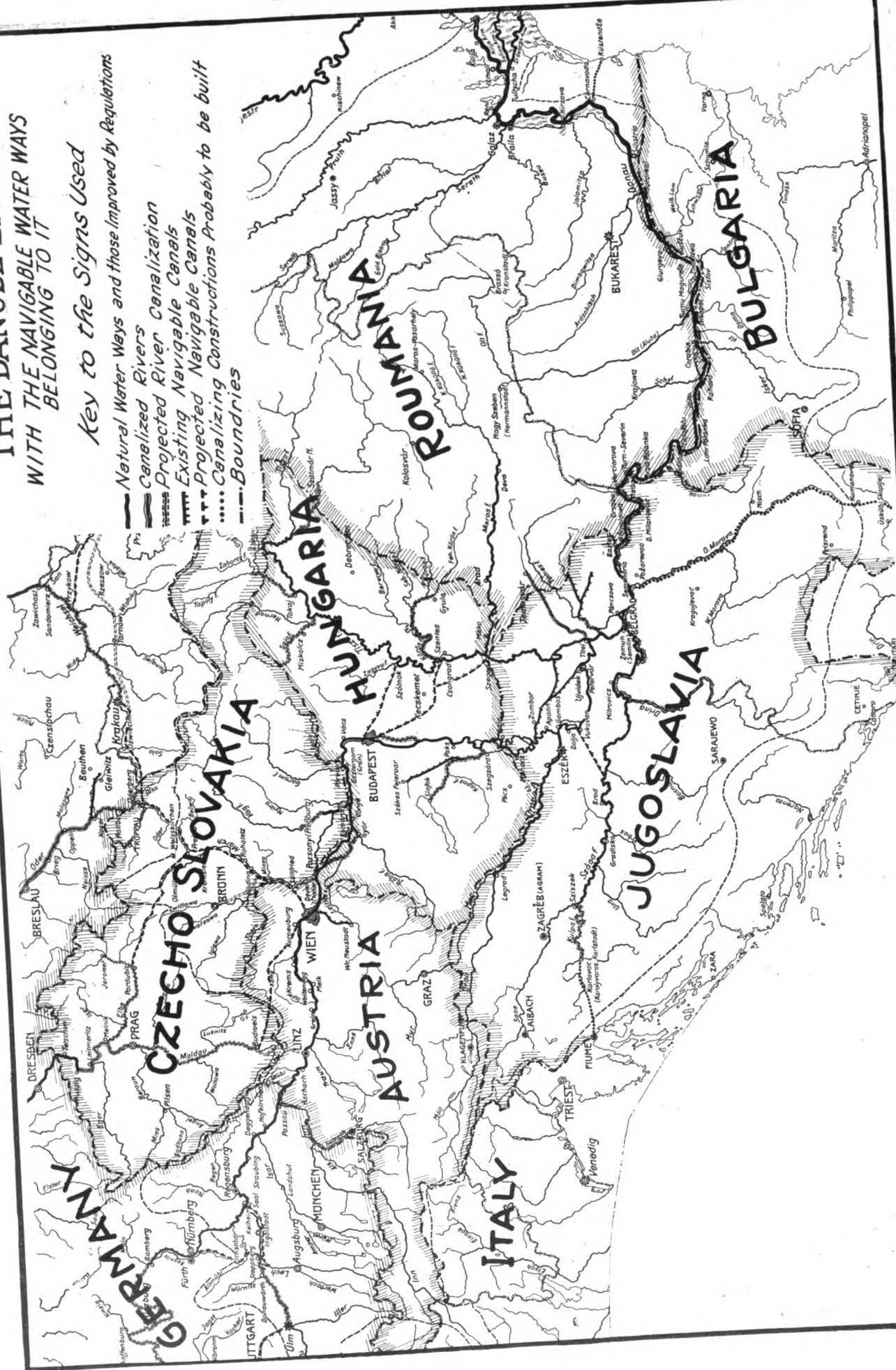
situation as well as in part on the draft of the boat, etc. Before the war barges were worth 50 to 60 lei (approximately \$9 to \$11) per deadweight ton. The chief operators of barges on the Danube too are the Hungarian yards in Budapest and the German yards on the Bavarian Danube.

Towing is done exclusively by the stern with tow lines of 400 to 500 feet in length. Only for short distances sometimes are the barges towed alongside the tug. Tugs of 1000 horsepower have not proved successful. Two, the *FAPNER* and the *FASOLD*, were built by

# THE DANUBE BASIN WITH THE NAVIGABLE WATER WAYS BELONGING TO IT

*Key to the Signs Used*

- Natural Water Ways and those Improved by Regulations
- Canalized Rivers
- Projected River Canalization
- Existing Navigable Canals
- Projected Navigable Canals
- Canalizing Constructions Probably to be built
- Boundaries



THIS MAP OF THE DANUBE BASIN SHOWS THE RIVERS AND CANALS TRIBUTARY TO THE LOWER DANUBE WHICH HAS  
PLAYED SUCH AN IMPORTANT PART IN THE COMMERCIAL HISTORY OF EUROPE

the Germans during the war, intended for towing at points where the current is particularly strong. From the form of the boats, one might conclude that they were intended for the Black Sea. But these tugs are a failure, as the Germans stated themselves during the war, and are not running, being in the hands of the French. On the lower Danube, 100 to 150 horsepower is used for harbor work and 250 to 350 horsepower for general towing. Since the war the need for stronger tugs has been more apparent as now there are frequently loaded vessels going upstream, while formerly the loaded barges came down the river and were towed empty against the current. The European Danube commission,\* whose jurisdiction is from Galatz to the mouth of the Danube (Sulina) and which has done much in the way of cutting a canal across the delta of the Danube, the original course of the river being considerably curved, classifies the tugs in two classes, the first, above 200 horsepower, being allowed to take two barges in the canal and the second 150 to 200 horsepower, a single barge. Tugs of lesser power are not allowed to tow in the canal. There are powerful paddle tugs but only for the service in the Iron Gate Rapids canal. They were mostly Hungarian and Austrian owned formerly, only one being Roumanian.

Before the war there were only a few tank barges owned by the different oil companies and a few owned by the Roumanian government river navigation service. Oil cargoes were seldom offered, all the oil being exported through Constantza by pipe line from the oil fields, or up the river to Austria and Germany by German or Roumanian government barges. Since the war this situation has changed. The Roumanian railways are in a bad shape and by no means adequate for the transportation of all goods required. Moreover the Germans had diverted the pipe line from Constantza to Giurgiu and thus there were oil loading facilities in this latter port. So there was a strong demand for tank tonnage both for transports up as well as down the river. As there existed no private tank barges some owners have converted their grain barges into tank barges. The only thing that was done was the providing of wooden bulkheads, transversal and longitudinal, in the holds. The Danube barges have ordinarily four or five holds, separated by thin steel bulkheads. Otherwise nothing was done and as some casualties have occurred and the barges were not deemed safe at all, the Inter-allied Danube commission has put some restrictions upon the tank barges plying through the Iron Gates. As a result, tank barges gradually are disappearing. Some of them were sent as far as Smyrna, towed by Danube tugs, but that was only an expedient in the days

of undreamed of freights. Many barges have been sold to Constantinople to serve as floating warehouses and to make the coastal transports, but they have proved unsatisfactory and many of them have been taken back to the Danube.

An idea of the international character of the traffic on the lower Danube may be had from the following table:

Division of Barges and Lighters* by Flags (Lower Danube only)						
Flag	1911		1916		1920	
	Total num.	Per cent of total	Total num.	Per cent of total	Total num.	Per cent of total
Roumanian.	231	37.1	311	47.4	255	54.4
Greek .....	257	41.2	281	42.8	160	34.1
French .....	12	1.8	11	1.7	12	2.6
Italian .....	28	4.5	15	2.3	11	2.3
Belgian ....	...	...	6	0.9	9	1.9
German ....	5	0.8	6	0.9	6	1.3
Bulgarian ..	10	1.6	4	0.6	5	1.0
British ....	9	1.4	11	1.7	4	0.9
Austrian ....	59	9.5	7	1.1	4	0.9
Turkish ....	12	1.8	3	0.5	3	0.6
Dutch ....	...	...	1	0.2	..	...
Total ....	623		656		469	

\*Exclusive of barges owned by Roumanian government river navigation service.

Division of Tugboats* by Flags (Lower Danube only)					
Flag	1916		1920		
	Total number	Per cent of total	Total number	Per cent of total	
Roumanian	35	44.9	34	58.7	
Greek	15	19.2	14	24.1	
Italian	5	6.4	3	5.2	
Belgian	4	5.1	5	8.6	
French	1	1.3	1	1.7	
Bulgarian	1	1.3	1	1.3	
Austrian	17	21.8	...	...	
Total	78	100.0	58	100.0	

\*Exclusive of tugs owned by Roumanian government river navigation service.

Division of Floating Elevators by Flags (Lower Danube only)					
Flag	1916		1920		
	Total number	Per cent of total	Total number	Per cent of total	
Roumanian	29	76.3	25	73.5	
Greek	4	10.5	4	11.8	
French	3	7.9	3	8.8	
Dutch	2	5.3	2	5.9	
Total	38	100.0	34	100.0	

Division of Shipowners† by Flags (Lower Danube only)					
Flag	1916		1916		
	Shipowners Total number	Per cent of total	Vessels owned* Total number	Per cent of total	
Roumanian	145	39.4	369	48.2	
Greek	185	50.3	285	37.3	
Italian	8	2.2	18	2.4	
French	4	1.1	15	2.0	
German	4	1.1	6	0.8	
Austrian	4	1.1	24	3.1	
Bulgarian	3	0.8	5	0.7	
British	3	0.8	11	1.4	
Belgian	2	0.5	10	1.3	
Dutch	2	0.5	3	0.4	
Turkish	3	0.8	3	0.4	
Roumanian and Greek	4	1.1	16	2.1	
Total	368	100.0	765	100.0	

Flag	1920		1920		
	Shipowners Total number	Per cent of total	Vessels owned* Total number	Per cent of total	
Roumanian	86	44.1	264	46.2	
Greek	80	41.0	122	21.4	
Italian	4	2.1	12	2.1	
French	3	1.5	14	2.5	
Turkish	3	1.5	3	0.5	
German	2	1.0	2	0.3	
Bulgarian	2	1.0	6	1.1	
Austrian	1	0.5	3	0.5	
British	1	0.5	4	0.7	
Belgian	1	0.5	11	1.9	
Dutch	1	0.5	2	0.3	
Roumanian and Greek	10	5.1	61	10.7	
Total	195	100.0	571	100.0	

†Exclusive of Roumanian government river navigation service.

\*Barges, tugs and floating elevators.

## Norwegian Shipping Gets Government Aid

Shipping in Norway was aided by that government to the extent of 25,000,000 kroner, \$6,500,000 at normal exchange or \$4,000,000 at current exchange, during the fiscal year to June 30, 1922, according to Eugene Chamberlain, transportation expert of the United States department of commerce. The Norwegian department of commerce has general charge of the administration of Norwegian shipping laws, and government aid is paid only to steamers which conform to the government's requirements as to hulls, machinery, and seaworthiness generally, and as to officers and crews. Companies receiving assistance must continue to perform services required by the department for three months after the end of the fiscal year on the same terms as during the year. Government assistance is granted only after a complete financial statement, showing all the items of operating expenses and receipts for the previous year, and the particulars of the capital account of each company asking assistance is submitted to the department. These statements are printed in full to accompany budget estimates for the next year. Companies are forbidden to apply reserve funds for depreciation, etc., to current expenses, and when a company retires from the service, the king is authorized, in his discretion, to require reserve funds to be turned into the national treasury.

Steamers receiving government aid are required to carry members of the Norwegian congress free of charge, and they are also required to carry the mails free. The steamers and lines which receive government assistance resemble in several respects star routes and rural free delivery routes in the United States, as on account of the configuration of Norway, many points are accessible only by water. Of the 25,000,000 kroner only 255,000 kroner are for Norwegian steamers in foreign trade.

While the purposes for which government aid is granted remain much as they were before the war, the war increased their urgency, owing to the difficulty the government encountered in maintaining the food supply of its people, especially in remote hamlets, for it will be recalled that less than 5 per cent of Norwegian territory is under cultivation. The food administration of Norway during the war was the head of the shipping branch of the Norwegian department of commerce. The amount of government aid required, especially owing to the high cost of bunker coal, has been much greater than in prewar years when it seldom exceeded 2,000,000 kroner.



# Marine Business Statistics Condensed

## Record of Traffic at Principal American Ports for Past Year

### New York

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	426	1,635,068	463	1,805,798
October .....	452	1,846,327	467	1,848,637
September .....	519	1,985,981	542	2,104,884
August .....	515	1,772,837	508	1,865,798
July .....	509	1,928,541	520	1,977,690
June .....	486	1,718,879	551	2,070,048
May .....	524	1,769,601	496	1,759,780
April .....	454	1,651,584	473	1,758,160
March .....	462	1,708,727	484	1,829,016
February .....	414	1,548,412	391	1,533,163
January .....	370	1,230,000	396	1,436,614
December, 1921.	398	1,372,663	436	1,604,960
November .....	423	1,543,430	415	1,506,071

### Seattle

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	138	374,871	139	374,871
October .....	164	417,901	148	406,498
September .....	159	375,340	159	382,079
August .....	162	396,363	153	387,908
July .....	140	373,211	137	371,526
June .....	139	384,290	137	354,702
May .....	138	357,583	150	361,835
April .....	129	328,172	154	365,057
March .....	198	508,760	202	515,606
February .....	159	478,849	147	417,425
January .....	174	479,514	177	509,508
December, 1921.	183	528,191	180	517,996
November .....	177	489,119	166	454,118

### Key West

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	69	71,740	70	71,705
October .....	61	67,755	64	77,225
September .....	57	64,645	59	62,676
August .....	65	69,962	61	65,883
July .....	67	80,673	67	85,336
June .....	60	73,308	58	73,842
May .....	89	107,629	82	101,318
April .....	77	81,917	81	86,471
March .....	97	78,984	92	76,531
February .....	84	67,080	78	68,137
January .....	77	69,850	77	72,321
December, 1921.	76	73,276	74	70,169
November .....	70	79,586	67	78,618

### Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)  
(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	75	221,130	78	241,326
October .....	80	205,137	73	202,326
September .....	103	261,963	74	224,079
August .....	104	273,123	76	222,478
July .....	116	307,058	84	248,337
June .....	103	282,251	83	233,964
May .....	117	310,117	80	234,220
April .....	94	245,785	63	197,807
March .....	107	288,295	79	257,149
February .....	94	240,663	62	189,140
January .....	86	243,546	67	211,468
December, 1921.	89	256,660	90	285,894
November .....	89	249,873	87	252,606

### New Orleans

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	220	598,306	219	599,150
October .....	239	630,306	235	625,605
September .....	212	555,017	223	571,299
August .....	249	625,819	250	629,150
July .....	227	570,709	236	601,740
June .....	253	596,752	234	587,483
May .....	236	632,495	230	610,916
April .....	221	565,559	225	594,842
March .....	235	643,251	258	716,568
February .....	197	582,189	201	576,973
January .....	225	621,483	217	603,995
December, 1921.	208	576,354	271	788,172
November .....	209	533,483	219	600,086

### Portland, Me.

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	22	45,567	21	46,755
October .....	27	60,114	22	49,594
September .....	32	68,125	27	57,609
August .....	28	42,746	28	47,459
July .....	19	39,950	20	39,571
June .....	11	16,601	15	21,765
May .....	16	21,380	10	22,477
April .....	14	51,228	18	62,091
March .....	23	81,938	20	77,044
February .....	23	73,634	24	75,625
January .....	21	64,885	21	67,309
December, 1921.	29	92,777	32	99,527
November .....	24	37,712	12	16,794

### Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	6	21,036	38	118,738
October .....	17	44,423	46	149,670
September .....	5	22,051	45	132,751
August .....	15	43,887	51	158,879
July .....	22	62,986	55	158,254
June .....	22	73,791	56	175,961
May .....	21	61,513	73	198,599
April .....	18	59,180	83	232,485
March .....	29	77,775	79	235,809
February .....	24	66,156	72	192,640
January .....	22	78,412	53	152,957
December, 1921.	24	83,609	64	184,012
November .....	27	84,214	60	171,235

### Boston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	130	357,264	59	123,255
October .....	149	408,855	91	217,899
September .....	193	511,027	101	248,328
August .....	192	449,871	116	263,774
July .....	159	324,795	94	229,492
June .....	137	169,015	94	161,888
May .....	133	251,304	104	192,231
April .....	71	138,683	103	270,499
March .....	85	241,289	56	135,671
February .....	76	218,853	58	153,350
January .....	70	185,175	42	108,423
December, 1921.	94	239,170	61	134,039
November .....	62	137,585	80	180,940

### Savannah

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	14	41,665	15	40,606
October .....	19	52,065	19	46,054
September .....	26	68,878	26	73,540
August .....	22	63,662	22	59,974
July .....	23	66,833	23	61,655
June .....	11	24,870	20	53,367
May .....	11	20,536	16	40,181
April .....	8	20,485	15	42,591
March .....	6	12,845	19	47,946
February .....	9	17,568	15	40,622
January .....	6	11,561	9	23,601
December, 1921.	4	8,876	14	43,281
November .....	10	19,543	16	44,187

### San Francisco

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	42	154,024	42	154,280
October .....	556	1,125,214	526	1,109,815
September .....	535	1,030,252	530	1,032,879
August .....	507	1,071,981	506	1,038,402
July .....	499	1,021,517	478	1,000,501
June .....	483	914,717	486	873,946
May .....	477	885,753	470	862,712
April .....	419	796,654	465	895,918
March .....	418	816,268	446	819,813
February .....	409	744,590	390	729,773
January .....	415	797,676	416	759,577
December, 1921.	439	845,793	461	854,595
November .....	432	791,219	445	869,988

### Mobile

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	68	147,775	53	130,769
October .....	59	143,207	52	110,398
September .....	66	121,037	51	85,801
August .....	60	112,431	65	137,552
July .....	79	152,475	73	138,543
June .....	77	153,357	76	141,413
May .....	61	109,793	55	114,691
April .....	61	144,237	62	123,238
March .....	73	136,937	57	110,363
February .....	54	127,606	59	117,172
January .....	71	147,866	64	136,242
December, 1921.	85	194,757	87	216,233
November .....	87	104,489	47	86,559

### Galveston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	56	174,964	87	304,352
October .....	59	156,587	85	260,702
September .....	48	144,403	56	187,724
August .....	59	180,814	63	203,194
July .....	52	165,276	59	186,201
June .....	61	193,016	61	200,957
May .....	60	196,575	52	200,787
April .....	64	190,675	63	210,853
March .....	66	155,728	55	166,298
February .....	45	134,229	48	138,482
January .....	53	141,172	65	182,442
December, 1921.	74	220,986	85	255,851
November .....	77	221,217	70	199,885

### Baltimore

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922.	114	361,162	132	403,593
October .....	97	289,239	101	304,431
September .....	107	333,387	112	298,444
August .....	110	326,163	106	300,080
July .....	103	320,104	90	280,394
June .....	99	280,002	118	333,877
May .....	117	350,494	103	282,285
April .....	98	277,582	110	319,103
March .....	107	323,515	125	362,451
February .....	93	294,309	103	334,507
January .....	72	225,800	85	274,080
December, 1921.	95	281,373	102	312,528
November .....	78	243,934	80	253,943

### Los Angeles

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
October, 1922.	117	115,548	138	94,522
September .....	61	127,969	96	133,561
August .....	52	143,931	43	117,758
July .....	44	125,139	48	138,275
June .....	48	109,261	38	90,915
May .....	47	141,219	55	174,644
April .....	53	161,709	45	138,927
March .....	75	172,471	59	139,424
February .....	76	105,243	63	108,207
January .....	88	149,622	101	125,795
December, 1921.	94	161,393	81	137,450
November .....	66	42,054	90	69,275
October .....	68	124,682	76	123,276

### Portland, Oreg.

(Exclusive of Domestic)

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# Marine Business Statistics Condensed

## Port Traffic Record

### Houston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922....	65	72,192	63	215,043
October .....	55	57,106	53	168,254
September .....	43	46,600	43	97,005
August .....	35	40,503	32	63,281
July .....	29	30,909	32	73,299
June .....	38	48,938	36	74,798
May .....	44	45,108	42	134,046
April .....	42	61,751	47	98,825
March .....	48	45,312	40	105,309
February .....	28	27,173	30	86,028
January .....	32	53,779	31	92,096
December, 1921..	22	42,359	21	27,001
November .....	23	30,705	27	46,519

### Port Arthur, Tex.

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922..	42	143,551	47	154,010
October .....	68	227,039	66	217,502
September .....	53	158,181	57	168,681
August .....	69	227,941	70	224,654
July .....	88	296,956	82	270,263
June .....	81	271,752	87	285,633
May .....	90	303,623	88	292,595
April .....	90	282,288	101	313,829
March .....	91	318,679	87	269,369
February .....	73	233,148	81	250,138
January .....	82	261,439	77	261,604
December, 1921..	106	359,401	104	339,605
November .....	92	286,179	89	263,940

### Providence

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1922..	11	47,565	10	31,470
October .....	9	31,293	9	31,232
September .....	30	84,037	13	40,223
August .....	18	61,741	11	38,649
July .....	10	19,279	7	22,228
June .....	10	31,095	7	17,423
May .....	14	49,985	13	37,000
April .....	9	24,854	7	31,049
March .....	12	45,966	8	34,272
February .....	13	53,367	11	46,372
January .....	11	46,093	12	50,449
December, 1921..	8	26,053	16	50,847
November .....	12	50,551	16	59,677

## November Ore Shipments

Increased demand for iron ore from the Lake Superior district, which has made shipments throughout 1922 nearly double the previous year's totals, resulted in a large movement during November. In that month, 3,410,934 gross tons were shipped from the upper lake ports against 406,451 tons in the corresponding month last year. In addition, 9626 tons were loaded early in December making the aggregate movement for the last five weeks of the season 3,420,560 tons.

This total brought the season's shipments up to 42,613,184 gross tons, an increase of 20,312,458 tons over the 22,300,726 tons shipped during the 1921 season. This increase of 91 per cent makes the 1922 total about equal to the level held in the several years previous to the war. However during the war, Lake Superior district ore shipments went beyond the 60,000,000-ton figure. At the present time, prospects for 1923 are excellent, indications pointing to a move-

ment of about 55,000,000 tons. This would represent a gain of about 30 per cent over the 1922 movement and would approximate about 90 per cent of a record year's total.

Shipments by ports during November and December were divided as follows:

Port	November and December, 1922	Season of 1922
Escanaba .....	*470,928	4,592,354
Marquette .....	118,656	1,976,220
Ashland .....	370,368	5,813,207
Superior .....	956,212	11,234,195
Duluth .....	1,130,423	13,044,771
Two Harbors .....	373,973	5,952,437
Total .....	3,420,560	42,613,184
1922 increase .....	3,014,109	20,312,458
*Includes 9626 tons loaded in December.		
November total is 3,410,934 tons.		

## Lake Erie Ore Receipts

In November, Lake Erie ports received 3,328,195 gross tons of iron ore out of a total movement of 3,410,934 tons. By ports these receipts were distributed as follows:

Port	Gross tons
Buffalo and Port Colborne.....	423,334
Erie .....	125,418
Conneaut .....	580,154
Ashtabula .....	736,583
Fairport .....	52,152
Cleveland .....	711,516
Lorain .....	306,480
Huron .....	67,642
Toledo .....	161,706
Detroit .....	163,210
Total .....	3,328,195

## Record of Traffic Through Panama Canal

NEW records were set up by traffic through the Panama canal in October. Cargo passing through in the month totaled 1,445,863 tons, which was greater than the previous record of 1,211,100 tons made in July, 1922, by 234,763 tons. From the Pacific to the Atlantic, cargo totaled 880,788 tons, the largest monthly movement in either direction in any month since the ca-

nal was opened. This tonnage was 210,436 tons more than the previous high, Pacific to Atlantic, and 207,390 tons greater than the former record, Atlantic to Pacific. The vessel and cargo tonnages in American and foreign bottoms in both directions, and their total, together with the number of vessels making transit, are shown in the following table:

		Atlantic to Pacific traffic —Panama Canal—			Pacific to Atlantic traffic —Panama Canal—			Total traffic through canal —Panama Canal—		
		No. of ships	Net tonnage	Tons of cargo	No. of ships	Net tonnage	Tons of cargo	No. of ships	Net tonnage	Tons of cargo
1922										
October	American	70	328,229	264,171	51	250,606	385,196	121	578,835	649,367
	Foreign	89	384,223	300,904	84	347,334	495,592	173	731,557	796,496
	Total	159	712,452	565,075	135	597,940	880,788	294	1,310,392	1,445,863
September	American	54	260,249	226,741	53	235,008	315,898	107	495,257	542,639
	Foreign	72	322,167	241,095	61	252,986	354,454	133	575,153	595,549
	Total	126	582,416	467,836	114	487,994	670,352	240	1,070,410	1,138,188
August	American	58	261,613	257,674	48	236,669	305,838	106	498,282	563,512
	Foreign	83	350,249	299,087	68	235,602	303,351	151	585,851	602,438
	Total	141	611,862	556,761	116	472,271	609,189	257	1,084,133	1,165,950
July	American	52	250,378	246,471	55	272,868	335,154	107	523,246	581,625
	Foreign	76	323,853	295,941	68	280,772	333,534	144	604,625	629,475
	Total	128	574,231	542,412	123	553,640	668,688	251	1,127,871	1,211,100
June	American	57	256,060	269,093	45	205,063	211,373	102	461,123	480,466
	Foreign	78	338,136	317,284	48	171,454	179,728	126	509,590	497,012
	Total	135	594,196	586,377	93	376,517	391,101	228	970,713	977,478
May	American	59	285,265	343,913	49	226,356	264,626	108	511,621	608,539
	Foreign	75	309,448	329,485	60	211,747	220,483	135	521,195	549,968
	Total	134	594,713	673,398	109	438,103	485,109	243	1,032,816	1,158,567
April	American	47	220,055	260,442	48	223,913	238,420	95	443,968	498,462
	Foreign	74	300,633	301,991	61	230,232	245,194	135	530,865	547,585
	Total	121	520,688	562,433	109	454,145	483,614	230	974,833	1,046,047
1921										
March	American	57	256,613	239,696	46	215,547	219,569	103	472,160	459,265
	Foreign	81	329,428	342,256	50	174,223	158,568	131	503,651	500,824
	Total	138	586,041	581,952	96	389,770	378,137	234	975,811	960,089
February	American	46	199,564	186,486	42	192,931	193,643	88	392,495	380,129
	Foreign	68	288,441	256,339	56	205,599	201,606	124	494,040	457,945
	Total	114	488,005	442,825	98	398,530	395,249	212	886,535	838,074
January	American	47	208,770	206,633	38	169,575	153,649	85	378,345	360,282
	Foreign	78	304,994	286,958	47	163,177	160,058	125	468,171	447,016
	Total	125	513,764	493,591	85	332,752	313,707	210	846,516	807,298
December	American	44	198,506	163,744	43	198,528	179,441	87	397,034	343,185
	Foreign	91	377,163	353,366	61	243,047	256,502	152	620,210	609,868
	Total	135	575,669	517,110	104	441,575	435,943	239	1,017,244	953,053
November	American	48	227,644	173,027	36	160,457	182,992	84	388,101	356,019
	Foreign	75	311,373	213,654	63	242,937	285,767	138	554,310	499,421
	Total	123	539,017	386,681	99	403,394	468,759	222	942,411	855,440
October	American	43	201,893	165,942	46	195,968	217,141	89	397,861	383,083
	Foreign	88	369,282	208,495	78	302,411	394,197	166	671,693	602,692
	Total	131	571,175	374,437	124	498,379	611,338	255	1,069,554	985,775

## Pittsburgh Traffic Lower

Traffic on the river of the Pittsburgh district declined approximately 63,000 tons in November from the October total, according to the monthly report of the United States engineer. The tonnage was 2,993,619 as compared with 3,059,824 tons in October. The loss was caused chiefly by a slump in coal and gravel shipments. Coal totaled 2,235,443 tons in November and 2,323,309 tons in October, a decline of 57,866 tons. Gravel shipments amount to 298,566 tons in November and 313,106 tons in October, a loss of 14,540 tons. Steel shipments reached the highest point since they have been listed separately, totaling

55,746 tons as against 48,526 tons in October and the previous high total of 50,275 tons last June. The record by rivers and commodities for November follows:

Commodity	Allegheny	Monongahela	Ohio	Total
Coal	141,180	1,759,842	364,421	2,265,443
Coke	.....	27,550	.....	27,550
Gasoline	1,100	440	278	1,818
Gravel	111,765	85,713	81,088	298,566
Iron and steel	4,420	28,475	22,851	55,746
Packet cargo	.....	.....	5,954	5,954
Sand	123,330	105,639	103,431	332,400
Unclassified	150	4,240	1,752	6,142
Total	381,945	2,011,899	579,775	2,993,619

The Mediterranean winter cruise of the MAURETANIA has been extended from 54 to 60 days in order to make five additional ports of call.

## Lake Michigan Receipts

Receipts of iron ore at Lake Michigan ports in November were 879,960 gross tons. The following table shows the division by ports:

Port	Gross tons
South Chicago, Ill.	515,027
East Jordan, Mich.	.....
Boyne City, Mich.	.....
Milwaukee	4,809
Indiana Harbor, Ind.	58,609
Gary, Ind.	301,455
Total	879,960

The new steamer WILLIAM G. CLYDE of the Carnegie Steel Co., cleared recently from Pittsburgh for Wheeling, W. Va. On board were a number of the officials of the company.

# Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—  
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Alabama	Nov. 5	Collision	E. of Mobile	Consider'ble
Abbie C. Stubbs	Nov. 13	Disabled	Near Hyannis	Windlass dis.
Albany	Nov. 18	Sank	Blackwell's Is.	Not stated
Andaste	Nov. 25	Ashore	Cape Vincent N.Y.	Not stated
Alert	.....	Typhoon	At sea	Sails lost, rudder dis.
Bluefields	Nov. 5	Collision	E. of Mobile	Slight
Bottsford	Nov. 12	Stranded	Cornwall Canal	Jettis. cargo
Bornholm	Nov. 21	Cargo shifted	300 m. S.E. Ambrose	Jettis. cargo
Barbara W.	Nov. 26	Snow squall	Off Southport	Sank, total loss
Challamba	Nov. 12	Collision	Columbia River	Unknown
Congo	Nov. 18	Disabled	Mediterranean	Not stated
Calgarolite	Nov. 18	Collision	St. Lawrence	Not stated
Coyotte	Nov. 23	Disabled	Key West	Machy. dis.
Carolinian	Nov. 23	Fire	San Francisco	Unknown
Canadian Seigneur	Nov. 5	Disabled	St. John N.F.	Rud. gone
Cairn D'Hu	Nov. 21	Ashore	Quebec Bridge	Jettis. cargo
Charles & Vernon	Nov. 29	Disabled	New York	Rud. trouble
Charles M. Warner	Dec. 6	Disabled	Hay Lake	Machy. trb'l
Dorothy Palmer	Nov. 3	Disabled	Nantucket	Rud. broke
Dauperata	Nov. 6	Disabled	Off Dover	Steerer dis.
Davanger	Nov. 19	Disabled	Bermuda	Prop. blade
Delos Cook	Dec. 3	Disabled	near Soo	Hole in hull
Dorris	Nov. 17	Adrift	Beaver Harbor	Mast broke
Erie Maru	Nov. 4	Fire	At sea	In bunkers
Edith M. Kill	Nov. 22	Not stated	New York	Sank
Eskimo	Nov. 2	Gale	Briar Island	Consider'ble
Fort Hamilton	Nov. 16	Collision	New York	Not stated
Frontenac	Nov. 18	Collision	St. Lawrence	Top struct'e
Fritzoe	Nov. 24	Disabled	New York	Winch broke
Glenisla	Nov. 11	Ashore	Whitefish Pt.	Undamaged
Gladys E. Whidden	Nov. 12	Disabled	Parrsboro N.S.	Leak. badly
George B. Leonard	Dec. 2	Grounded	Mud Lake	Undamaged
G. R. Crowe	Dec. 4	Disabled	Key West	Machy. dam
Grand Trunk Ferry	Dec. 5	Struck pier	Grand Haven	Consider'ble
Hydaspes	Nov. 16	Collision	Boston	Hole in bow
Hattie A. Heckman	Nov. 15	Ashore	Exploits N.F.	May be tot'l loss
Herbert Sauber	Nov. 24	Not stated	At sea	Total loss
Harvester	Dec. 5	Grounded	Not stated	Not stated
Isabelle Carmenter	Nov. 21	Gale	Vin. Hav. Snd.	Ashore
James William	Nov. 7	Collision	Wilming. Creek	Starb. bow
J. N. Pew	Nov. 11	Explosion	Chester Pa.	Not stated
Jacobsen	Nov. 25	Not stated	B'klyn Bridge	Turned tr'l
Joseph Wood	Nov. 30	Dragged anch.	Duluth	Undam'g'd
John Sherwin	Nov. 30	Drag. anch.	Duluth	Undam'g'd
Josephine	Nov. 27	Fire	New York	Not stated
John Tracy	Dec. 5	Grounded	Not stated	Jettis. cargo
Jesse L. Leach	Dec. 2	Not stated	Provincetown	Sank
Javary	.....	Disabled	At sea	After hold
Kearsarge	Nov. 19	Struck obst.	Detour	Bucket off
L. D. Leopold	Nov. 15	Collision	St. Nazaire	Bow dam'd
Louis	Nov. 16	Collision	New York	Sank, raised
Lolita	Nov. 19	Heavy sea	Pacific coast	Turned over
Lucille B.	Nov. 28	Ashore	Port Latour	Abandon'd
Loeben	Dec. 5	Ashore	Miami	Not stated
Lake Gunni	Dec. 6	Stranded	Tortuga Is.	Not stated
Lizzie D. Small	Nov. 25	Sand Bar	Off Westport	Total loss

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Malton	Nov. 17	Ashore	Lake Ontario	Damaged
Moonlight	Nov. 9	Gale	Squibnocket	Sails down
Monte Grappa	Nov. 14	Heavy sea	At sea	Abandoned
Metro. Bge. 17	Nov. 18	Sank	Blackwell's Is.	Not stated
Maryland	Nov. 14	Ashore	Bremerhaven	Not stated
Monkolia	Nov. 22	Ashore	Lower Elbe	Not stated
Matilde Pierce	Nov. 21	Ashore	Near Trapani	Leak badly
Marq'te & Res'm'r 1	Nov. 30	Grounded	Near Montreal	Jettis. cargo
Minnekahda	Nov. 27	Ashore	Gluckstadt	Not stated
Merrimack	Nov. 22	Leak in hold	At sea	To cargo
Maplehurst	Nov. 30	Hurricane	Lake Superior	Wrecked
Miriam H.	Nov. 29	Ashore	Wabana	Not stated
Nordland	Nov. 13	Foundered	Near Milwaukee	Total loss
North Sea	Nov. 19	Struck obst.	Canad. Chan'l.	Hole in side
Nola	Nov. 10	Fire	New Orleans	Abandoned
Navigator	Nov. 11	Ashore	Near Tampico	Not stated
Nordfeld	Nov. 23	Ashore	Flowers Cove	May be tot'l loss
Norkild	Nov. 24	Grounded	Bel. Isle Str'ts.	Not stated
Oscar II	Nov. 12	Ashore	Christiansand	Bot. dam'gd
Ogemaw	Dec. 3	Fire	St. Clr. River	Destroyed
Odanah	Dec. 6	Grounded	Near Iroquois	Undamaged
Oridoro Maru	.....	Collision	At sea	Damaged
Presque Isle	Nov. 25	Ice & Gales	Lake Superior	Sinking
Poinsettia	Dec. 2	Not stated	St. Thomas	Slight
Parks Foster	Dec. 4	Ashore	S.E. Shoal	Jettis. cargo
Quincy A. Shaw	Nov. 27	Ashore	Port Huron	Undamaged
Real	Nov. 10	Ashore	Grundekalle	Damaged
Rubens	Nov. 7	Fire	At sea	Not stated
Russell S. Zinck	Nov. 15	Ashore	Rock Point	Not stated
Ruth Martin	Nov. 29	Disabled	Charleston S.C.	Leaking
Sultan	Nov. 15	Grounded	St. Mary's Chan'l	Jettis. cargo
Stuart Dollar	Nov. 8	Disabled	At sea	Rud. broke
San Pablo	Nov. 10	Grounded	Jamaica W. I.	Not stated
St. Cr. Therbault	Nov. 10	Collision	Vin. Haven	Sails & fits
Simla	Nov. 23	Disabled	St. Lawrence	Lost propl & rudder
Swenson	Nov. 21	Not stated	North River	Sank
Solitaire	Nov. 27	Fire	Flor. Straits	Consider'ble
Samuel Hart	Nov. 9	Collision	Casco Bay	Sank
Turret Cape	Nov. 17	Stranded	Above Cardinal	Slight
Tomi Maru	Nov. 5	Disabled	At sea	Rud. broke
Tecumseh	Nov. 21	Collision	At sea	To stem
Topolobampo	Nov. 19	Broke in two	Gulf of Cal.	Sank
Tuscania	Nov. 25	Disabled	Gibral'tar	Machy. dis.
Temple	Nov. 27	Fire	New York	Not stated
Toteco	Nov. 3	Disabled	Galveston	Rudderless
Unita	Nov. 6	Ashore	Panama Canal	Not stated
Virginia Dare	Nov. 9	Disabled	Tampa	Leaking
Vidette	Nov. 7	Collision	Wilmington Creek	To bow
Vincenzo Florio	Nov. 22	Grounded	Philadelphia	Not stated
W. J. Colle	Nov. 14	Not stated	San Juan	To lumb. eg
West Hematite	Nov. 15	In tow	At sea	Boil. trble
West Hobomac	Nov. 14	Storms	At sea	Dk. fittings
Westport	Nov. 19	Disabled	New York	Eng. trble
W. H. Donner	Nov. 30	Dragged anc.	Duluth	Undam'gd
West Katan	Dec. 2	Ashore	Willemstad	Unknown
West Segovia	Dec. 2	Fire	New Orleans	Not stated



# Activities in the Marine Field

Latest News from Ships and Shipyards

## Ore Shipments Heavy as Season Closes

BY MYERS L. FEISER

CLOSE of navigation on the Great Lakes found 42,613,184 tons of iron ore carried in the season of 1922. This is more than 20,300,000 tons over the 1921 season and 22,121,000 tons under the record movement of 1916. Making up the season's total was the 3,420,560 tons shipped in November, added to the 39,192,624 tons carried up to Nov. 1. The season's tonnage is regarded as satisfactory in view of the slackened demand in the iron and steel industry caused by the strikes in the railroad and coal trades.

Coal shipments on Dec. 4 had made a sharp recovery from the slowness developed earlier in the year because of the strikes. On that date shipments up the lakes totaled 18,171,965 tons, compared with 22,385,495 tons in the same period last year and 22,390,145 tons in 1920.

A record cargo of 475,000 bushels of corn was taken by the Oakes steamer E. L. FORD from Duluth to Depot Harbor. She reported ready to unload at 10 o'clock the morning of Nov. 5, and was finished at 8:40 p. m. Nov. 7.

The steamer NAGAHO was abandoned to underwriters as a total loss after she was badly pounded in a storm while bound from Buffalo to Montreal. She is at Montreal. Originally she was the F. R. BUELL, built in 1889 at Detroit. She is 204 feet long, 36 feet beam and 14 feet deep with a carrying capacity of 1200 tons.

Return of two whaleback steamers, BAY VIEW and BAY STATE, from the Atlantic coast after 20 years, was heralded in Cleveland with the news that they had been purchased by the Central Dredging Co. and would be converted into sand suckers by the Interlake Engineering Co. during the winter.

The United States engineer's office at Chicago announces that the center pier of the old swing bridge, formerly located in the south branch of the Chicago river, has been entirely removed. Sweeping at the site shows a clear depth of 21 feet the full width of the channel.

Grain elevator construction planned for Port Arthur and Fort William for 1923 and 1924 will provide additional capacity of 10,000,000 bushels of grain, it is stated. The N. Bawlf Grain Co., Ltd., plans to erect a unit of 1,000,000 tons this year and another of 1,000,000 tons next year. The Bole Co. has purchased

a site but the proposed capacity has not been announced. The W. D. Staple elevator will have a capacity of 1,000,000 bushels, the Stewart 2,000,000 and the Parrish & Heimbecker annex 1,000,000 bushels. When completed the entire group in that vicinity will have a total capacity of more than 60,000,000 bushels.

The first cargo of storage grain to reach Port Huron was aboard the D. J. MORRELL of the Hanna fleet late in November.

Contract for the removal of the wrecked steamer MALTON, ashore on the Main Ducks at the foot of Lake Ontario, was awarded by the underwriters to the Donnelly Wrecking Co., Kingston, Ont., for \$10,000.

Purchase of the CHIPPEWA from the Arnold Transit Co., Mackinac Island, Mich., by the Sandusky & Islands Steamboat Co. is announced. The CHIPPEWA will be used to succeed the ARROW in service between Sandusky and the islands. The ARROW was destroyed by fire Oct. 14. The CHIPPEWA, rebuilt in 1910, has been plying between Mackinac island and Sault Ste. Marie.

Launching of the lighter T. F. NEWMAN for the Great Lakes Towing Co. took place at Cleveland late in November. She succeeds the NEWMAN which was wrecked at Conneaut, O., last January. She is named in honor of the general manager of the Cleveland & Buffalo Transit Co., formerly president of the towing company. The T. F. NEWMAN is 180 feet long, 40 feet in beam and 20 feet deep with a capacity of 2500 tons. She has 10 hatches and will be equipped with a large towing machine, 1200 feet of mine towing cable, steam anchor windlass, patent anchors, a 30-ton traveling crane, steam steering gear and double drum mooring engines forward and aft.

M. H. Hussey at Waukegan, Ill., has purchased the dock at that port operated by the C. Reiss Coal Co. and will operate it as the Waukegan Coal Co.

Capt. John H. Hutton, retired lake shipmaster, died early in December at the home of a daughter in Detroit. He was 73 years old. He was born in Brockville, Ont., and early in life became identified with lake sailing. As a young man he obtained a master's license. For many years he was in the employ of Parker Bros. Later he was in command

of the YOSEMITE and the W. H. WOLF. He retired 9 years ago.

After four years on the Atlantic coast, the steamer MAPLECOURT, formerly the NORTHLAND of the Northern Steamship Co., has been brought back to the Great Lakes. Late in November she was towed into Buffalo in two sections in order to get through the Welland canal. She was first cut in two when she went to the coast in 1918. She now is the property of the Canadian Steamship Co.

Monthly mean stages of the Great Lakes for November, 1922 are reported by the United States lake survey as follows:

Lakes	Feet above mean sea level	
	October	November
Superior	602.50	602.35
Michigan-Huron	579.97	579.54
St. Clair	574.69	574.21
Erie	571.86	571.41
Ontario	245.61	245.15

Lake Superior is 0.15 foot lower than last month, 0.15 foot higher than a year ago, and 0.25 foot below the average stage of November of the last 10 years.

Lakes Michigan and Huron are 0.43 foot lower than last month, 0.10 foot lower than a year ago, and 0.81 foot below the average stage of November of the last 10 years. Lake Erie is 0.45 foot lower than last month, 0.39 foot lower than a year ago, and 0.57 foot below the average stage of November of the last 10 years. Lake Ontario is 0.46 foot lower than last month, 0.30 foot higher than a year ago and 0.54 foot below the average stage of November of the last 10 years.

The old steamer RICHARD QUEEN, which broke almost in two in a gale at Buffalo last year and which has been in drydock there for several months, has been bought by Peterson & Collings, Cleveland, and taken to Erie where she will be rebuilt during the winter. She was built in 1898, is 295 feet long and 44 feet in beam with 2228 gross tons.

The steamer JAMES MACNAUGHTON, built at the Ecorse yard of the Great Lakes Engineering Works for the Wilson Transit Co., went into commission Nov. 1, under command of Edward R. Morton, who had been with the steamer GENERAL GARRETSON.

Of the foreign commerce of the United States carried on the Great Lakes in the fiscal year ended June 30, 1922, Chicago cleared the greatest

tonnage, 1,278,816 tons, or 19 per cent of the total, 6,750,711 tons. Canadian imports via Great Lakes vessels totaled 3,499,977 tons with Buffalo receiving 2,736,414 tons or 77 per cent. American vessels predominate in this traffic to the extent that of the 3537 vessels of 13,111,627 deadweight tons entering American Great Lakes ports during the fiscal year 1922, 55 per cent of the number and 67 per cent of the tonnage were under the American flag. These vessels carried 86 per cent of the total inbound cargoes. A total of 3517 vessels of 12,620,996 deadweight tons cleared from American Great Lakes ports, 55 per cent of the number and 66 per cent of the tonnage being represented by Amer-

ican ships. Of the total 6,750,711 tons outbound, American vessels carried 65 per cent.

The steamer OGEMAW, owned by Burns Bros., Detroit, bound from Toledo to Georgian bay, was burned to the water's edge below Grand Point in St. Clair river early in December. Her crew of 13 men escaped in lifeboats. The OGEMAW was 162 feet long and had a capacity of 650 tons.

A twisted rudder was the damage sustained when the steamer PARKS FOSTER went ashore near Southeast shoal Dec. 4. Her coal cargo, bound from Buffalo to Milwaukee, was lightered and

the vessel was released. She made repairs at the Ecorse yard.

Loaded with grain, the steamer ODANAH went aground at Iroquois point early in December but was lightered, released and reloaded. She escaped injury.

Officers of the Inland Water Line association were elected recently as follows at the annual meeting in Chicago: A. A. Schantz, Detroit, chairman of executive committee; J. S. Morton, Benton Harbor, president; M. J. McAlpine, Buffalo, vice president, and F. L. Leckie, Cleveland, secretary and treasurer.

## Late News From Atlantic Seaboard

INTERCOASTAL steamship trade is closely followed by competing lines and excellent service is offered. The constantly growing volume of traffic has made it necessary for the Luckenbach line, one of the largest companies engaged in this trade, to operate 22 ships in this service, 5 of which are chartered. A sailing every 5 days from the North Atlantic and every 14 days from the gulf is being maintained. In the period from Nov. 11 to Nov. 25, eleven of the line's largest freighters were to arrive and depart from Los Angeles alone, carrying in over 30,000 tons and taking away over 20,000 tons. Los Angeles has the following schedule, four ships from the north Atlantic, two from the Gulf of Mexico and five from other Pacific ports calling there to complete cargo. Of this fleet, the DOCHRA and the MONTAUK are among the chartered vessels, the first formerly operated by Swayne & Hoyt and the latter chartered from the International Mercantile Marine Co.

The White Star liner MAJESTIC, the largest ship in the world, and too large for accommodation in any British drydock, received her initial drydocking for painting, changing of propellers and inspection at the United States government graving dock at South Boston, Mass., in November. The drydocking was carried out without mishap, and the liner returned to New York for her cargo and passengers for Southampton.

It is reported that the Standard Oil Co., soon will put in commission 12 tankers, which have been anchored some months in Patuxent river harbor. Within three weeks four were placed in commission and three of the old type were sold to the Boston Iron & Metal Co.

Baltimore now has 26 sailings monthly to the Pacific coast, fast approaching one daily. Eleven lines are in this trade and appear to be prospering.

Exports of grain from Baltimore during November reached 5,740,357 bushels as compared with 2,514,665 bushels in

November last year. From January to November, 1922, Baltimore's grain exports have amounted to 81,467,967 bushels in comparison with 50,136,821 bushels during the like period last year.

Baltimore's exports of barreled flour are increasing. During November 71,438 barrels were shipped out as compared with 12,655 barrels in the similar month of 1921. During the last few months flour totals for the periods have risen steadily.

The Federal Shipbuilding Co., Kearney, N. J., will launch two new ships this month for the Merchants & Miners Transportation Co., Baltimore. The vessels are the BERKSHIRE and ALLEGHANY and are oil-burners, 366 feet long and of 4000 gross tons. Each cost \$850,000 and a speed of 18 knots is expected.

I. H. Winchester & Co., New York, operating shipping board steamers from New York to the United Kingdom, have entered the Hampton Roads field. The steamer WEKKA loaded 1200 hogsheads of tobacco for Bristol and Avonmouth recently.

Wages for longshore labor at the Hampton Roads ports will not be changed during the coming six months, a settlement based upon the scale embodied in the agreement which expired Oct. 1, having been effected in a series of conferences held at Newport News between representatives of the men, their master stevedores and steamship companies. The wage scale is 60 cents per hour, straight time, and 90 cents per hour overtime. This is five cents below the wage paid at New York. It was also agreed that the five cents extra pay per hour for handling sulphur and steel dust was to be given during the coming year.

General cargo service from Norfolk to the Near East is offered by the Reardon Smith line of Cardiff, according to an announcement made by Hasler & Co., Norfolk, agents for the line which

has given intermittent service in the past between Hampton Roads and points in the United Kingdom and Continental Europe.

Libel for \$5000 damages as the result of a collision between the steamers FLORIDA and CITY OF BALTIMORE off Thimble Shoals on Sept. 9 has been filed in federal court at Norfolk. The libel was by the Baltimore Steam Packet Co., owners of the FLORIDA, against the Chesapeake line, owner of the CITY OF BALTIMORE. The allegation is that the collision was the fault of the CITY OF BALTIMORE's navigator. The libellant states that about 4:30 on the morning of September 9 the FLORIDA was struck on the starboard side just forward of the gangway. The CITY OF BALTIMORE overhauled the FLORIDA, it was claimed, as both boats were making passage to Norfolk from Baltimore.

The Baltimore Foreign Trade club announces Frank C. Munson, president of the Munson line, as the first speaker of its 1922-1923 season. The meeting was to be held in December.

The price at which bunker fuel will be furnished government vessels by the Standard Oil Co., at Baltimore during next year has been fixed at \$1.55 per barrel at terminal and \$1.61½ per barrel barge delivery.

The Baltimore Steamship Co.'s Porto Rico line steamer, Gov. JOHN LIND, has completed her first trip since being fitted with passenger accommodations. In addition to a number of passengers, the vessel brought the largest consignment of grape fruit ever entered at that port.

Delivery has been received by the Old Bay Line of its new passenger and freight steamer STATE OF MARYLAND recently completed at Wilmington, Del. After a successful trial trip on the Delaware, she was brought to Baltimore and completely outfitted in the matter of furniture, linens, crockery and stores. After a day of public inspection, she

sailed on her maiden voyage from Baltimore to Norfolk.

Savannah showed in the fiscal year ending June 30, 1922, the largest clearances of export cargoes and Charleston the greatest entrances of import cargoes of all inbound and outbound shipping of the south Atlantic coast district, according to an analysis by the transportation division of the department of commerce. During the fiscal year, 386 vessels of 2,210,046 deadweight tons entered the district, carrying 817,793 long tons of cargo, and 477 vessels of 2,961,585 cleared, carrying 1,311,663 long tons. American vessels comprised 69 per cent of the number and 68 per cent of the tonnage entering the district; and 58 per cent of the number and tonnage clearing.

The MARGARET COUGHLAN bound from Vancouver, B. C., recently brought into Montreal the largest cargo of lumber in the port's history, 5,000,000 feet. The

lumber is to be used in the extension of wharves in the eastern section of the port. The president of the harbor commissioners, Dr. W. L. MacDougald, states that work will be carried on through the winter on these extensions and improvements, and that a thousand men will be employed.

The shipping board steamer LAKE HECATOR, built by the Globe Shipbuilding Co., Superior, Wis., has loaded at Philadelphia for South American ports, in the service of the International Freighting Corp. This ship, it is understood, is to be tendered to the government of Argentina in part payment of damages caused by the steamship AMERICAN LEGION in the harbor of Buenos Aires when she got out of control and sank several Argentine vessels.

Alteration of names of vessels in their fleets are being made by a number of steamship companies. The Canadian Pacific Co. has renamed five ships: The Vic-

TORIAN to MARLOCK, CORSICAN to MARVALE, TUNISIAN to MARBURN and SCOTIAN to MARGLEN, which means that they will be associated with the "M" class vessels such as MONTCALM, MONTCLARE, MINNE-DOSA and MELITA. The EMPRESS OF INDIA will also be added to this class by renaming her the MONTLAURIER.

New York state nautical schoolship NEWPORT graduated 30 young students at formal exercises held in the Maritime Exchange of the Port of New York, Nov. 16. Twenty-three of these young men are now qualified as junior officers of the American merchant marine, and seven are trained for the engine department as junior engineer officers.

John S. Emery & Co., Boston, agents for Reardon Smith Line, Ltd., recently announced a direct service from Boston to Hamburg which began in the latter part of November.

## Up and Down the Pacific Coast

WITH the advent of three new lines on the intercoastal route there are now 13 established American services operating between Atlantic and Pacific coast ports. This gives an indication of the remarkable growth in commerce through the Panama canal. The latest lines to enter the intercoastal trade are the Garland Steamship Co., Munson Steamship Line, and Moore & McCormack. The other companies previously in service are the North Atlantic & Western, Luckenbach, United American, Isthmian Steamship Co., Carribean & Pacific, Robert Dollar Co., Crowell & Thurlow, Williams Steamship Co., Elder Steel Steamship Co. and the Pacific Mail.

Henry Dearborn, president of the American-Hawaiian Line, accompanied by J. E. Cushing, Pacific coast manager, has completed a survey of conditions at north Pacific ports where the American-Hawaiian line, has been handling a great volume of business. Mr. Dearborn commented favorably on the growth in commerce between the two coasts.

To accompany its increasing commerce, Grays Harbor has installed a 2-kilowatt radio station which will greatly facilitate the handling of ship's business. The service has been furnished by the Grays Harbor Stevedore Co., with headquarters at Aberdeen.

Increased depth of water in the fairway and a 2000-foot addition to the ocean terminal will improve shipping facilities at Coos Bay, Ore. Arrangements for financing these extensions have been made by the port commission and work will proceed at once.

Capt. Fred H. Pearson, formerly master of the shipping board freighter WEST

IVAN, has been presented with a silver cup and a letter of commendation by the Japanese government. Captain Pearson and his crew saved the officers and seamen of the Japanese freighter FUKUI MARU when the latter foundered in the north Pacific.

Vancouver, B. C., claims a new loading record. The big freighter YORK CITY took aboard and trimmed 8200 long tons of bulk wheat in 23 hours. The cargo was completed with 800 tons of sacked grain between decks.

Suspension for one year of the master's license of Capt. S. S. Dahlby has been announced by the board of inspectors at Portland. Captain Dahlby was held responsible for the collision in the Columbia river between the steamer SANTA CLARA, on which he was pilot, and the dredge PORTLAND which was sunk and proved a total loss.

According to Capt. Alf. Hansen, master of the barkentine MONITOR, when his ship was recently drydocked to learn the cause of a persistent leak the sword of a swordfish was found driven entirely through a 6-inch plank. It is supposed that the fish took the ship for a whale and attacked the hull breaking off the sword.

Tenders for the construction of the steel ferry for service between the mainland and Vancouver island have been forwarded to Montreal headquarters of the Canadian Pacific railroad. The ferry is designed for carrying automobiles. It is planned to use diesel engines. The cost is estimated at more than \$200,000.

Shipping at Everett, Wash., is reported unusually active. From Jan. 1 to Nov. 15 more than twice the number of

freighters called at this port than during the entire year 1921. The figures are 367 deep water ships compared with 178 last year.

The Grays Harbor port district will have an election early in December to pass on an issue of \$200,000 bonds to continue the development of that port. Present facilities have been found inadequate to care for the increased movement of water commerce.

On Nov. 17, the steel passenger steamer PRINCESS VICTORIA, of the Canadian Pacific coastwise service, celebrated 20 years of service in local waters. During the two decades the vessel has steamed more than 1,500,000 miles and has made 5197 trips to Seattle from Vancouver and Victoria.

Under a new charter granted the British Columbia Pilots, Ltd., pilotage conditions are now as strict in British Columbia waters as though compulsory pilotage were in force. Examination of pilots and issuing of licenses are in the hands of the association which has the endorsement of British Columbia underwriters.

The Sydney E. Junkens Co. has been awarded the contract for erecting an ocean pier at Vancouver, B. C., for the Canadian Pacific railroad. The cost is estimated at \$2,000,000. The terminal will be doubled decked, 850 feet in length by 330 feet in width and is to be completed within a year.

That the ports of the Pacific Northwest are undergoing rapid development is proved by a recent compilation showing that approximately \$12,000,000 is available for improvements. Recently authorized expenditures of seven leading



ports show the following: Vancouver, B. C., \$8,000,000; Tacoma, \$1,500,000; Puget Sound navy yard, \$500,000; Port Angeles, \$300,000; Aberdeen, \$200,000; Olympia, \$150,000; and Vancouver, Wash., \$25,000. In addition improvements contemplated or authorized at Seattle and vicinity approximate \$1,000,000.

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Reconstruction of the burned portion of the East Waterway Dock & Warehouse Co.'s terminal, Seattle, has been begun. The work involves an expenditure of \$80,000.

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The cyanide process of fumigation has been resumed at all Puget sound ports on orders from Washington. Several months ago, following the death of several men at San Francisco, the cyanide process for fumigating vessels was abandoned for the old sulphur pot method. However, the latter is found more expensive and requires more time. Hereafter extreme caution will be exercised in using cyanide.

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So heavy has been the movement of lumber from Pacific Northwest ports, including British Columbia, this year, that during the first nine months of 1922 cargo shipments of lumber almost doubled the record for the same months

in 1921. Shipments for the nine months of 1922 were 2,381,203,785 feet as compared with 1,249,057,310 feet during the same period 1921.

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Improvements at the Puget Sound navy yard, for which money is now available, include a 600-foot extension to Pier 4, doubling the length and increasing its capacity from two to four capital ships. The work will cost \$500,000.

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Contracts have been awarded and work is now under way on the terminal oil station for the Associated Oil Co., Seattle. The site is on deep water where extensive piers, retaining walls, storage tanks, pumping plant and other facilities of a modern oil terminal are being built.

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One of the worst storms in years swept over the north Pacific in November, delaying all shipping and damaging a number of vessels. The steel freighter STUART DOLLAR, formerly the MANDARIN, built in China, was disabled while 1500 miles out on her voyage from Victoria to the Orient. Wireless calls for help brought the ocean going tug SEA MONARCH which had a long and hazardous tow before bringing the marine cripple back to port for repairs.

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H. B. Cummins, assistant traffic manager of the Galveston Commercial association, has returned from Washington where he assisted in fighting the application of the Mississippi-Warrior barge line for an increased differential. The case was argued before the interstate commerce commission.

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A 2-story sisal warehouse located at Eighteenth street and Avenue B, Galveston, was discovered afire recently. The flames spread rapidly to all parts of the building. The total loss is estimated at \$130,000, of which \$70,000 was the value of the 6000 bales of sisal. The other \$60,000 was the value of the building and damage to an adjacent cotton reconditioning plant. The Galveston Warehouse Co. had the sisal in storage for the Sisal Sales Corp. and the Galveston Cotton Co. was owner of both buildings.

\* \* \*

Sam T. Zinn, special deputy collector of customs at Galveston, recently spent a week in New Orleans to select a patrol boat for harbor work. The Q-14 was selected and is expected to be taken to Galveston when a few necessary repairs are made.

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The navy radio station at Miami, Fla., has been taken over by the Tropical Radio Telegraph Co. This station will be enlarged and new equipment installed when it will serve as one of the United States terminals for the United Fruit Co.'s radio system in the various countries of Central America.

\* \* \*

American motorship GLENDAREUL, operated by the Lone Star Steamship Co. has the distinction of being the first motorship engaged in a regular service between gulf ports and Porto Rico. After discharging a cargo of anthracite coal from Philadelphia, at Houston, Tex., the GLENDAREUL sailed for Porto Rico by way of Port Arthur, Beaumont and New Orleans.

\* \* \*

The New York & Porto Rico Steamship Co. is restoring the passenger service between New Orleans and Porto Rico, the steamship SAN JUAN sailing on Nov. 29, for San Juan, Arecibo, Aguadilla, Mayaguez, Ponce and Arroyo.

## Along the Gulf Coast

**B** RITISH steamer WAYFARER, 6222 net tons, had the record cotton cargo out of Galveston for the present year. Her cargo consisted of 25,592 square bales, about 16,000 of which were of standard density, the balance of high density. Had all the cotton been of high density and screwed into the holds instead of being hand stowed, she probably would have equaled the previous record of 33,120 bales set by the American steamer DANIEL WEBSTER several years ago. The WAYFARER cleared for Liverpool.

\* \* \*

The former record grain cargo of 400,000 bushels of wheat established at Galveston by the British steamer KRONFELS July, 1920, was surpassed in November 1922 when the Italian steamer EMANUELE ACCAME cleared for Genoa, with 422,342 bushels. The net tonnage of the EMANUELE ACCAME is 5792.

\* \* \*

The vessels clearing from Galveston on Nov. 29, carried among other items 82,457 bales of cotton, all destined to Europe. England had the largest amount, 39,170 bales, and the largest single cargo was that of the British steamer INDIAN with a total of 23,500 bales aboard. France took the next largest, 14,200 bales; Italy 11,597; Germany, 8590; Netherlands 4000; Denmark 2800; and Belgium 2100 bales.

\* \* \*

A bill of sale transferring the American steamer LAKE FLORIAN from the shipping board to the Lykes Steamship Co., Inc., was filed for record late in

November at the customhouse at Galveston. This is the second vessel of the lake type purchased by Lykes Bros. recently. Both vessels will continue in the West Indies trade.

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Representatives of the American Railway Engineering association arrived in Galveston recently to inspect the railroad yards, terminals, and port facilities in order that the data might be contained in their report to the annual convention of the association which meets in Chicago in March.

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W. H. McFadden, representing the Marland Oil & Refining Co., Ponca City, Okla., a large independent oil producer, met with the Galveston Commercial association at its annual meeting recently and stated the company's need for an export terminal. He looked over the facilities at Galveston and at Texas City and was so favorably impressed that he expects to recommend one as the company's export terminal.

\* \* \*

From Aug. 1 to Dec. 1, of this year, 1,603,337 bales of cotton were received in Galveston, an increase of 246,079 bales over the receipts of a like period last year. It is also 958,399 more bales than New Orleans received on the same period. Of the total 477,055 tons represent the stock on hand in the port, the balance having been shipped out.

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Dr. Paul D. Mossman, for more than a year in charge of the quarantine station at Galveston, has been transferred

# Equipment Used Afloat, Ashore

## Boiler Sight Glass for Distant Reading—Steam Ash Ejector Developed— Machine for Reseating Valves While in Position— Boiler Water Testing Apparatus

**R**EFINEMENTS and improvements in ship apparatus are the result almost always of trouble experienced in practical operation, or to save time and cost in the working of the ship. Often an apparatus or method is continued as nothing better offers, sometimes on the theory that what has been good enough so

far is good enough to continue in use.

The chief engineer of any ship from the smallest tramp to the greatest ocean liner has a real responsibility as the head of the mechanical department of the ship. Valuable property and the safety of passengers and crew would be imperiled were he to neglect his duties. It is, therefore, important that the ship designer, ship builder and owner should each do his share in giving the operating man a good ship with all reasonable instruments for assisting him in proper care and supervision.

A recent addition to boiler room equipment has been developed by the Pneumercator Co., Inc., 40 Flatbush avenue extension, Brooklyn, called the distant boiler gage glass. The accompanying illustrations show the instrument. The following claims are made for it:

1. The instrument may be installed at the eye level in the fireroom, and is always easily read, in contrast to a poorly lighted gage on a high boiler setting.

2. The instrument reproduces the sight glass on the boiler at any reasonable distance, and either above or below the boiler.

3. The instrument makes it possible to read the actual level of the water in the boiler when it falls below the bottom nut of the boiler sight glass.

4. It gives a much more steady indication of the water level, as the instrument is not so directly in contact with the steaming action of the water in the boiler.

5. It will give the true water level in the boiler without the error due to capillary attraction found in the boiler sight glass.

6. It will give a steady indication when the water in the boiler is surging to such an extent that it is impossible to read the sight glass accurately.

7. It will continue to function even if the sight glass on the boiler becomes choked.

8. By bringing the entire battery of gage glasses directly under the eye of the engineer or head fireman it allows him to know at all times whether or not the water tenders are

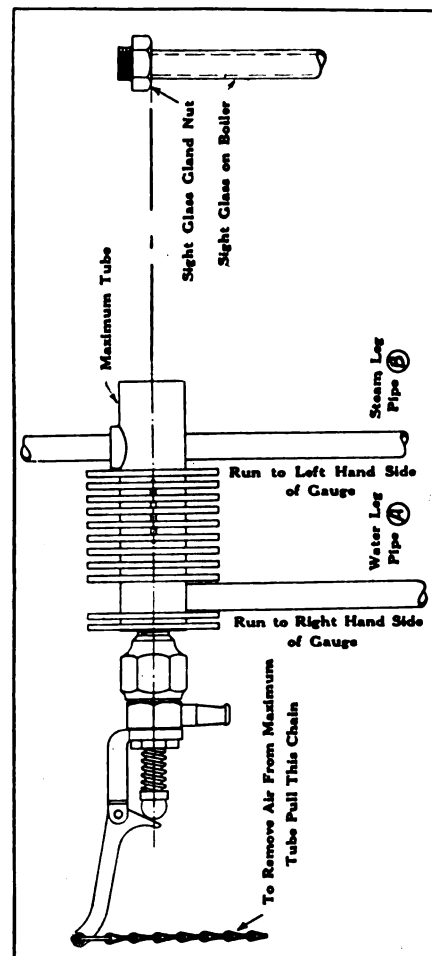


FIG. 2—CORRECT POSITION OF MAXIMUM TUBE WHEN INSTALLED

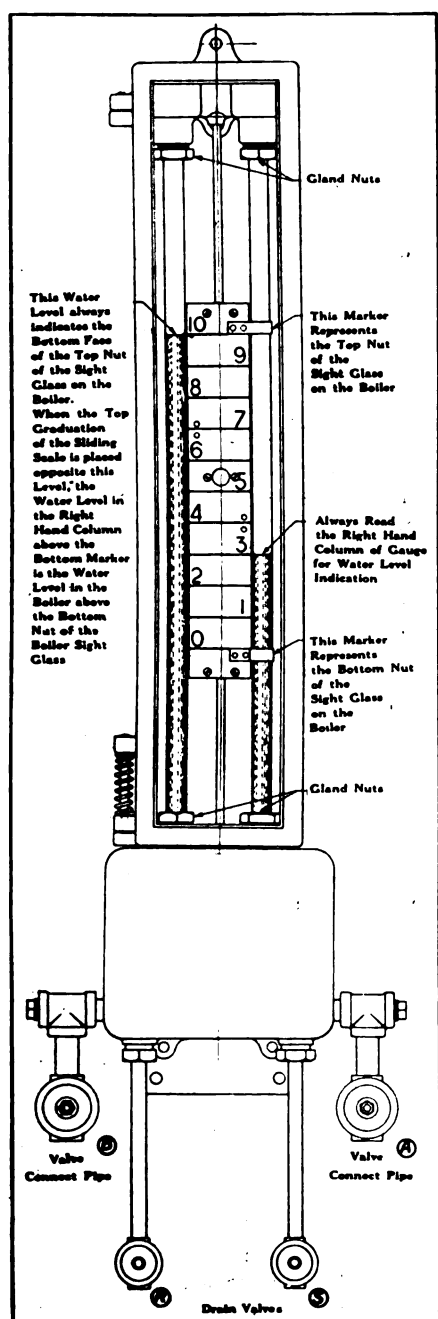


FIG. 1—VIEW OF DISTANT GAGE GLASS SHOWING METHOD OF READING

read the water levels for the several boilers all on one board located to suit.

The gage glasses of oil boilers can be located together in the most convenient place either in the fireroom or in the chief engineer's room or office. Of course, the regular boiler gage glasses remain and function as usual.

The instrument is connected to the

line is connected to the top of the sight glass.

Both the instrument and its method of attachment to boiler are comparatively simple. All parts are strongly made and of good material. The principle upon which it works is the difference in level of two balanced columns of water, one the water level in the boiler, the other a level to

## Ash Ejector Improved

Though most ships recently built or building are fitted to burn oil and many coal burning ships are being converted to oil burners, coal burners still predominate and the problem of removal of ashes on board ship continues to be a troublesome one. The engine room crew far prefer the oil burner. Reasons for this are obvious, and one of the strongest is the ash nuisance and its removal. On the side of the owners, indications are not lacking that many are prepared to go back to coal if oil goes beyond bounds in price or becomes difficult to obtain.

Interest, therefore, attaches to improvements of a definite character in efficiency, ease and certainty of operation, space occupied, simplicity and wearing qualities, being made today in methods of ejecting ashes from boiler rooms of coal burning ships. One of the latest improved type of ash ejectors is that designed and manufactured by the Victor Engineering Co. Inc., Philadelphia. The general arrangement is shown in the accompanying illustrations, Figs. 1 and 3, while insert Fig. 2 shows in somewhat greater detail the intake and lower elbow.

Methods of removing ashes vary greatly. On the older ships, the custom still survives of shoveling the ashes into iron buckets fitted with yokes, raising them to upper gratings in way of uptakes with block and falls and then after dragging to side of ship, emptying them overboard. Needless to say this is slow and laborious. This process has been improved upon by securing a small steam driven drum hoist to bulkhead above the upper gratings, using a wire rope over the drum and raising the loaded bucket by power. Sometimes an overhead trolley is used for moving buckets to ship's side. The next decided improvement was the installation of a hopper with top surface two feet or so above boiler room flooring, connecting this hopper by a large diameter pipe going up at an incline to side of ship. A gate valve is fitted in this line near the skin of the vessel. Hydraulic means are used for ejecting the ashes. This necessitates a fairly powerful steam driven pump for forcing the ashes out through the pipe by a stream of water.

The apparatus under discussion in this article differs from the last mentioned in several salient features. Steam taken at boiler pressure in a 1-inch line delivered to a nozzle of  $\frac{3}{4}$ -inch diameter is used for driving the ashes out, at a height of approximately 20 feet. The intake fitting taking the place of the hopper is fitted so that the top is flush with the boiler room flooring. The operating bar, with covers for ash intake-hole and air inlet-hole attached, automatically operates the steam valve for

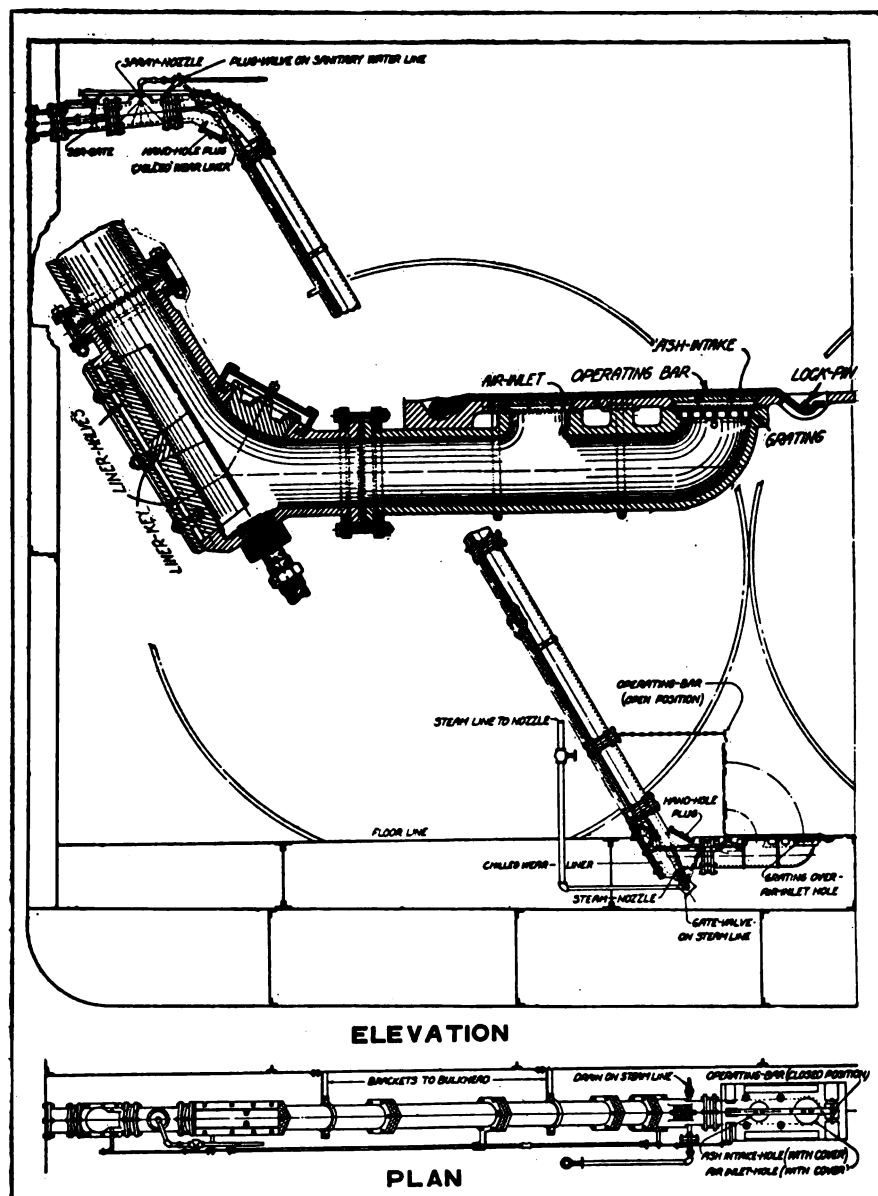


FIG. 1—GENERAL ARRANGEMENT, ELEVATION AND PLAN SHOWING INSTALLATION OF ASH EJECTOR ON BOARD SHIP. FIG. 2 (INSERT)—SECTIONAL VIEW OF INTAKE END AND LOWER ELBOW OF ASH EJECTOR

boiler by two lines of piping of  $\frac{3}{4}$ -inch brass pipe with extra heavy fittings. These two lines enter a short tube called the maximum tube as shown in Fig. 2. It is important that the maximum tube be erected on a line with the bottom face of the upper sight glass gland nut. One of the pipe lines connecting the instrument to the boiler enters below the regular sight glass connection, the other

bottom face of the top nut of the sight glass. As long as they continue balanced, these columns will continue to show exactly the same difference of levels whether they are above or below the boiler. The setting of the scale for taking direct readings is shown in Fig. 1. This apparatus is a simple and useful addition designed to increase safety and economy on board ship.



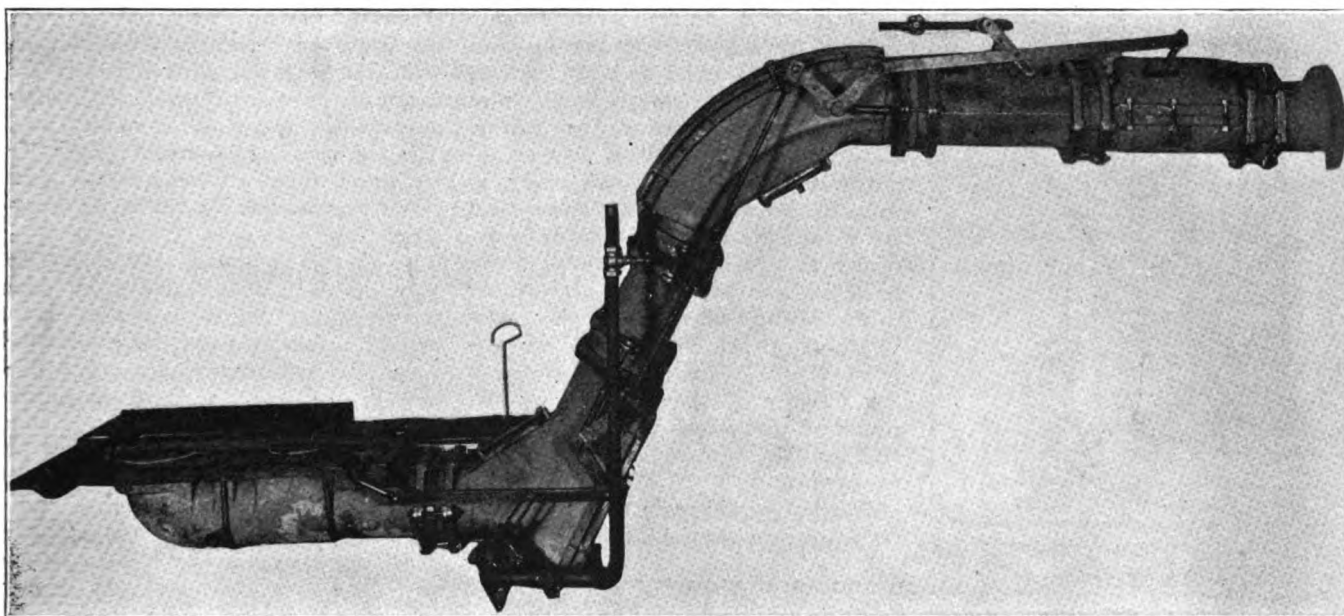


FIG. 3—PHOTOGRAPH OF A FULL SIZED SAMPLE SHIP INSTALLATION OF ASH EJECTOR

admitting steam to nozzle and also by an arrangement of levers opens the plug valve on the sanitary line admitting sea water to the spray nozzle, to settle the dust before the ashes are discharged, and opens sea gate at far end of ejector. When the covers for ash intake-hole and air inlet-hole (attached to operating bar) are in place, the steam valve, plug valve in sanitary line and sea gate valve are all closed automatically in the same operation.

The important matter of wear and replacement of parts most severely subjected to abrasion are taken care of by the use of chilled castings of great hardness. The liners in the elbows are made 2 inches thick of nonmachinable cast iron in two interchangeable parts held together as one solid block by a wedge shaped key drawn up by two bolts cast into the wedge and which pass through the back plate of each elbow. The overboard pipe line is 6 inches inside diameter and  $\frac{3}{4}$ -inch thick, with walls cast in 6-foot lengths or less to take care of ejectors of any required height. Clinkers of 5-inch diameter can be handled without possibility of choking pipe.

In regard to efficiency, it is claimed that an ejector with  $\frac{1}{4}$ -inch nozzle at normal boiler pressure will eject 5 tons of ashes per hour. Assuming a consumption of 300 tons of coal on a voyage and 10 per cent ashes or 30 tons, the ejector would be needed for a total period of 6 hours. At a boiler pressure of 175 pounds, about 8 pounds of steam per minute would be used to operate the ejector or 480 pounds of steam per hour or for 6 hours 2880 pounds of steam or fresh water. This amount in proportion to the total of feed water carried is slight. To evaporate

this quantity of fresh water on the assumption of 8 pounds of water per pound of coal would take  $2880 \div 8 = 360$  pounds of coal.

### Valve Reseating Machine

Wasting steam or water is expensive. Particularly on board ship is it important to save in every way. One of the sources of loss of steam well known to all marine engineers is leaky valves. Three types of valves are commonly used, globe valve, gate valve and pump valves such as the Kingston. Valves leak generally from worn or scored seats. Such a condition can be corrected with valve in place by a process of reseating. A reseating machine of good design and construction is, therefore, of importance in the tool equipment of a ship's engine room.

The Leavitt Machine Co., Orange, Mass., has for a long period specialized in making tools for repairing

valves. It manufactures the following general types shown in the accompanying illustrations, globe valve, gate valve and pump valve reseating machines.

The manufacturer of these machines states that they are in use under the severe conditions of service in the United States navy and abroad, and by many of the private steamship companies on salt and fresh water.

This machine was designed to meet the need for economy both in the saving of steam and in port repair bills. The operation of the machine is simple and positive, and any type

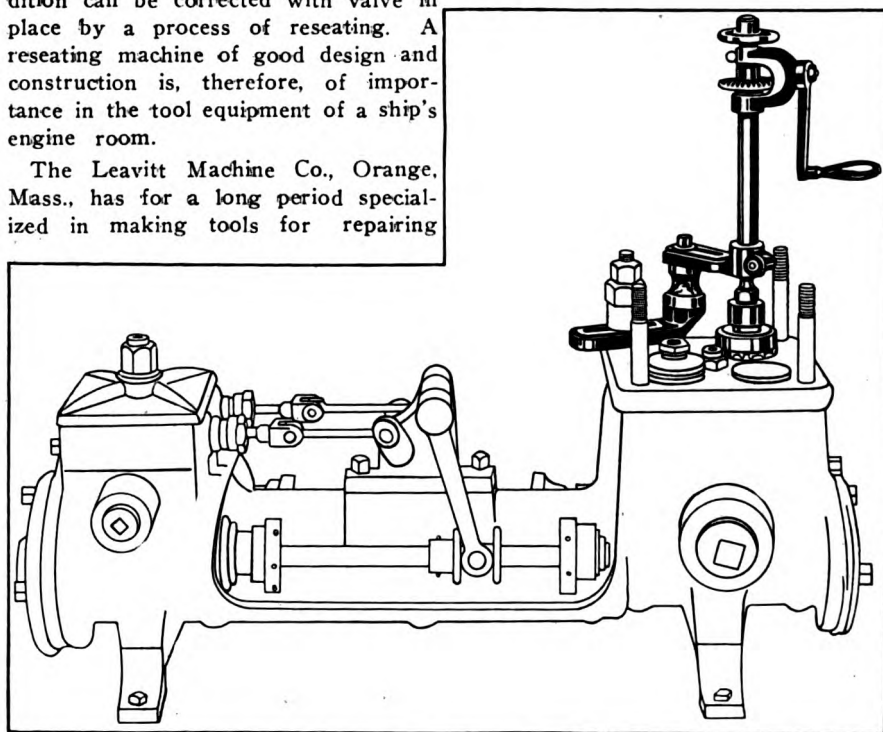


FIG. 1—HOW MACHINE FOR RESEATING PUMP VALVES IS SET UP

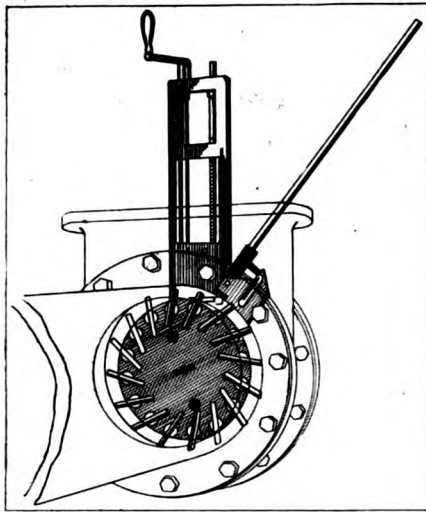


FIG. 2—GATE VALVE REFACING MACHINE IN PLACE

of valve may be resealed in place. Small bits or cutters are inserted at the bottom of the vertical spindle and are quickly brought into contact with the valve seat. The spindle is turned by means of gearing with a hand crank.

### Simple Method of Testing Boiler Water

Corrosion and scale are the relentless twin enemies of the marine boiler. Salt water and air combined give a destructive acidity to the boiler water, depending upon the quantity, while the presence in salt water of calcium and sodium, causes a hard scale to form. Corrosive action or pitting is the direct eating away of the material itself, making necessary the renewal of tubes and substantially reducing the length of service of a boiler. The formation of a hard scale on all parts of the interior of a boiler which comes in contact with water of salt characteristics is hardly less of a menace to its life and usefulness. Hard scale is really an excellent form of insulation and, therefore, a boiler in which scale has been allowed to form, is a difficult and extremely uneconomical steamer. A serious danger also arises, if the scale becomes thick enough, in actually causing the fire contact part to be twisted out of shape or destroyed, as the heat of the fire is not conducted away rapidly enough.

Utmost care should, therefore, be taken to eliminate all causes for salt water in the boiler. The condenser should be tight and air should be removed from the feed water. Practically, efforts are made to accomplish the above results with varying success but for the preservation of the boiler it is necessary to know what degree is attained. The simplest and commonest method in use by all engineers is the

measurement of density. This roughly indicates the degree of salt and in order to neutralize its effect an alkali such as soda is introduced into the feed water in quantity proportional to the density. As this method after all, is only an approximation it is more satisfactory to make a chemical test of boiler feed water for chlorine and alkali daily, maintaining an alkalinity of 10 to 20 grains by adding soda ash each day as necessary to the feed and filter tank. Boiler water so maintained will not corrode the material of the boiler nor will it deposit any quantity of scale. To follow this procedure then means a much lengthened life for the boiler and greater economy in steaming.

Practical conditions in any boiler room on board ship are not favorable to even

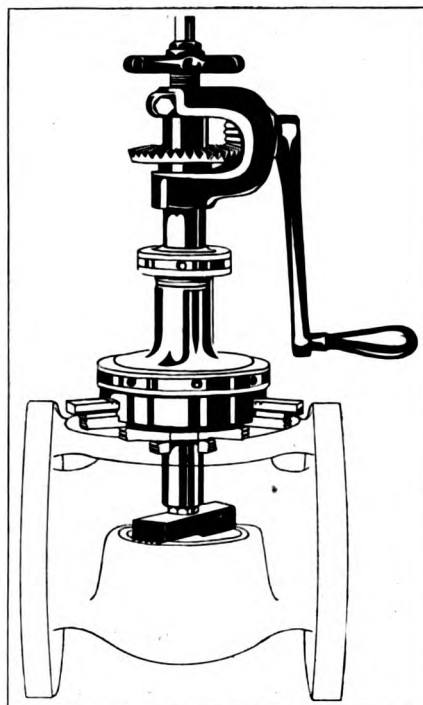


FIG. 3—RESEATING MACHINE FOR GLOBE VALVE READY TO OPERATE

the simplest chemical analysis where it is necessary to use finely graduated test tubes, glass beakers and bottles. As a result, only the larger and more important ships actually attempt to make this analysis.

In order to meet the rough and ready needs of the smallest and simplest as well as the largest ships, Capt. J. B. Patton, a retired officer of the United States navy, with long engineering experience in the navy and in the merchant marine, has invented and is now having manufactured by the Marine Works, Inc., 31 Coenties Slip, New York City, a boiler water testing apparatus.

Only five movable articles are included in the set and these are made of metal or rubber. The water sample is measured, mixed and tested in an

enameled ironware tray. The two testing liquids are in metal cans with nozzles, while the acid and silver solutions are measured by standardized hard rubber droppers, giving a drop of constant size. The accompanying illustrations show the component parts of the apparatus, and also the entire unit stowed in its receptacle.

To use the apparatus, a sample of the water to be tested is dipped up with the tray, the tray is then held in a vertical position big end down, until the water level falls even with a hole in the side of the tray, so placed as to retain 6 cubic inches. The tray is then held in a horizontal position ready for the test. This size sample is used for alkali test, or for the testing of fresh water for chlorine. When held with the small end down, the tray holds a sample of 6/10 of a cubic inch, the proper amount for making a chlorine test of salty water.

For the alkali test, several drops from can A-1 (oil can type) containing phenolphthalein as an indicator, are added to the water sample, which should turn red in color. Standard acid from bottle A-2 is then dropped into the tray with a standardized dropper, and the number of drops counted until the red color disappears. The number of drops used indicates the number of grains per gallon of alkalinity or soda ash. If this number lies between 10 and 20, the amount of soda ash used has been correct, if below 10 increase the amount used, if above 20 reduce the amount used.

In the test for chlorine, several drops from can C-1 (oil can type) containing potassium chromate as an indicator are added to the water sample (in case of fresh water 6 cubic inches are used, and in the case of salty water 6/10 of a cubic inch). Nitrate of silver solution from bottle C-2 is then dropped into the tray with a standardized dropper and the number of drops counted until the sample water turns red. Each drop of



FIG. 1—COMPONENT PARTS OF BOILER WATER TESTING APPARATUS AND CONTAINER

nitrate of silver in the case of *fresh* water indicates one grain of chlorine per gallon and in the case of *salty* water indicates ten grains of chlorine per gallon.

The inventor claims for this apparatus accuracy and simplicity of operation as well as the important feature of the non-breakable nature of the component parts as compared with glassware.

## New Bethlehem Plant Has Historical Record

Acquisition recently of the plant of the Simpson's Patent Dry Dock Co., East Boston, Mass., by the Bethlehem Shipbuilding Corp., Ltd., marks another chapter in the history of one of the old ship repairing yards in New England. The history of this plant goes back to the days when the American clipper ships were carrying the American flag to all the ports of the world and when American bottoms were carrying a large part of the commerce of the world.

The company's first drydock, on Marginal street, East Boston, was built in 1853. Three years later, the drydock was purchased by James Simpson, who established Simpson's Patent Dry Dock Co. During the civil war much repair work on naval vessels was performed. It is said that the famous ship KEARSARGE, after the engagement in which she put the confederate destroyer ALABAMA out of commission, went to this dock for repairs and again was put in fighting trim.

Two other drydocks have been built, so that at present the docking facilities include one dock 455 feet long by 81 feet wide, one 256 feet long by 67 feet wide, and a small dock, 164 feet in length by 44 feet

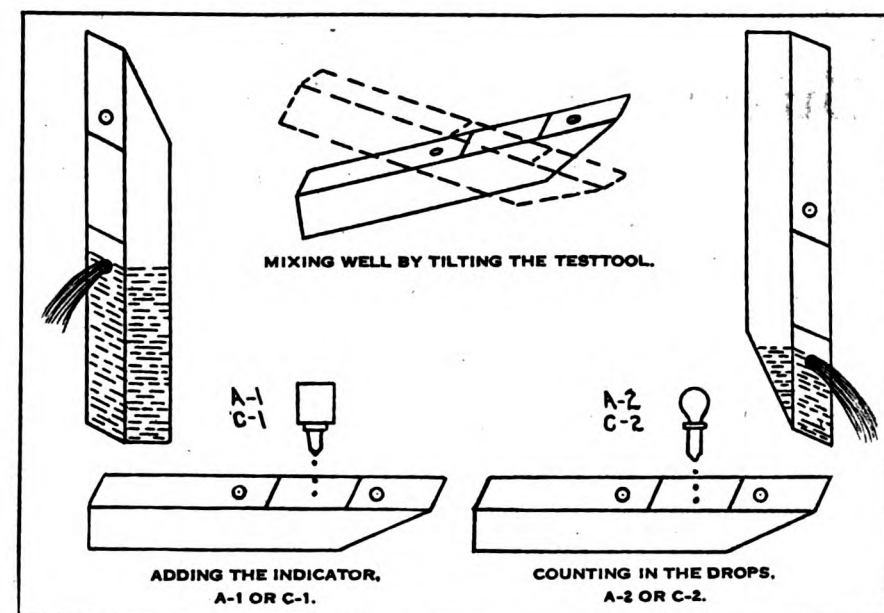


FIG. 2—VIEW SHOWING METHOD OF MEASURING AND TESTING LIQUID

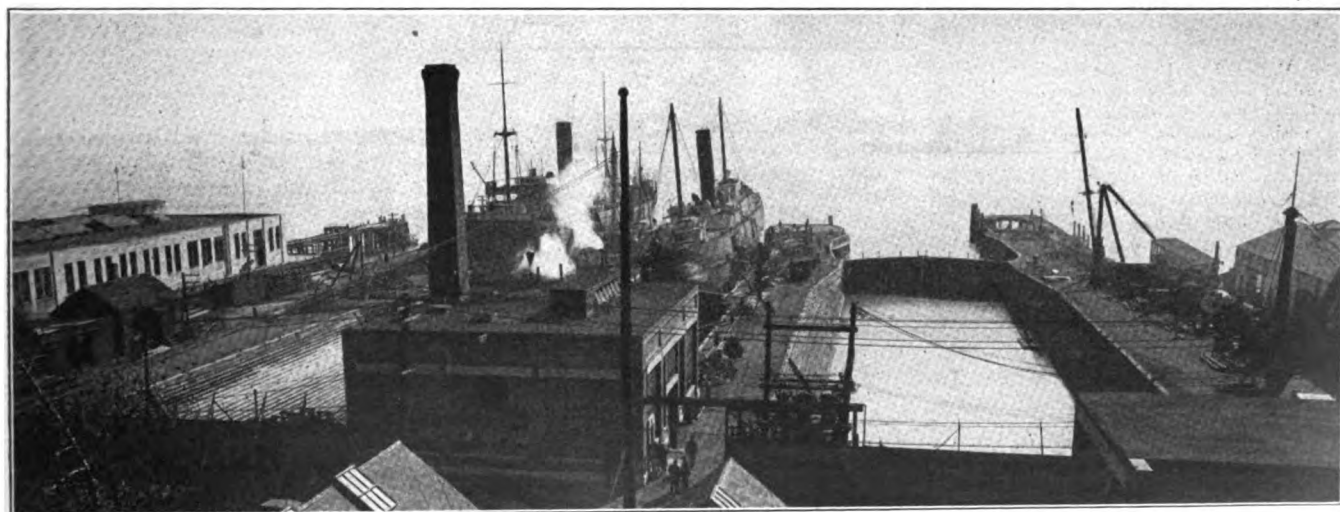
wide, especially suited for tugs, fishing vessels and other small craft.

Equipment for repair work has been added to the plant as it has been developed. Recently a new power and pump house was built as well as a modern machine shop. Other shops and equipment include a boiler shop, paint shop, carpenter shop, blacksmith shop, derricks, etc.

During the world war a number of German vessels that had been damaged by their crews after being interned, were repaired at the plant. This yard will be continued as a separate and complete repair plant by Bethlehem Shipbuilding Corp., and will be known as the Simpson Drydock plant. S. W. Wakeman, general manager of the Fore River plant has also been appointed general manager of the Simpson Drydock plant.

## Liner New York Sold

One year following termination of 30 years' service between New York and English channel ports under the American line flag, the liner NEW YORK was sold recently at Constantinople for \$78,000 in part satisfaction of claims of creditors said to aggregate \$250,000. She was sold by the American consul general to Italian interests. Her owners were a syndicate of Americans, Greeks and Jews who planned a service between Constantinople and New York. The syndicate obtained title to the boat when the Irish-American line failed without sending her on a single voyage. That line had purchased her when the Polish-American line failed. The Polish-American line had bought her from the International Mercantile Marine Co. for \$100,000.



GENERAL VIEW OF THE SIMPSON DRYDOCK PLANT OF THE BETHLEHEM SHIPBUILDING CORP., LTD., LOOKING TOWARD THE MAIN SHIP CHANNEL IN BOSTON HARBOR. IN THE CENTER IS THE POWER HOUSE AND PUMP ROOM, AT THE RIGHT THE 455-FOOT DRYDOCK, AT THE LEFT THE 256-FOOT DRYDOCK. THE 164-FOOT DOCK IS BEHIND THE POWERHOUSE



# Business News for the Marine Trade

The Adams Boat line recently was organized to engage in a transportation business between Tampa, St. Petersburg, Manatee River and Sarasota Bay towns of Florida.

Capitalized at \$100,000 the Delanco Construction Co., Delanco, N. J., recently was incorporated at Trenton, N. J., to engage in a shipbuilding business. The company was chartered by L. D. Steele and J. P. Schmidt.

The plant of the International Shipbuilding Co. at Pascagoula, Miss., recently was sold. The plant was erected during the war to build ships for Italy. The plant was disposed of at a 3-day auction, everything being sold but three steel hulls. The sales brought around \$200,000. The total original cost to the company of the material, etc., sold at the auction, is said to have been over \$12,000,000.

The United States shipping board has decided to sell Hog Island and will call for sealed bids to be opened Jan. 30.

The Clyde Steamship Co. recently acquired the Miami Steamship Co., which operated a line between Miami, Fla., and Jacksonville, Fla. A new service will be inaugurated shortly. The Miami branch, of the Clyde line will connect with the main line of the company at Jacksonville, which has four sailings per week between Jacksonville, Charleston and New York.

Capitalized at \$300,000, the Yonkers & Alpine Ferry Co., recently was chartered at Albany, N. Y., by W. F. Dee, J. Williamson and J. Schwartz.

The Donnelly Dry Dock Co. of Manhattan, recently was incorporated under the laws of New York with a capital stock of \$250,000. The company was incorporated by W. T. Donnelly and D. W. Barnes.

The Susquehanna Line of New York has been chartered under the laws of Delaware with a capital stock of \$100,000 to engage in a general steamship business. The Susquehanna Steamship Co. operates shipping board vessels from New York and Philadelphia to Scandinavian and Baltic ports.

The drydock of the New York Harbor Dry Dock Co., Staten Island, N. Y., recently was put in operation. It is 585 feet in length, 85 feet / inches wide between wings at the bottom, 23 feet draft over keel blocks at low tide and will accommodate ships up to 13,000 gross tons.

The Algiers Dry Dock & Repair Co., New Orleans, of which Edgar Berthaut is president, is planning the construction of a floating all-steel drydock capable of accommodating vessels up to 10,000 deadweight tons. The drydock will be 250 feet in length and 54 feet wide and will be operated by electric-driven centrifugal pumps. It will be erected at an estimated cost of \$400,000. The company plans to increase its capital stock to \$500,000.

The Johnson Iron Works, Dry Dock & Shipbuilding Co., New Orleans, has received a contract to build a collier for the Consolidated Fuel Co. to be 110 feet long, 35-foot beam, draft of 6-feet 10 inches, equipped with a 90-foot tower capable of loading coal at the rate of 200 tons an hour.

A. O. O'Brien and C. L. Wagenknecht plan to establish a marine repair plant at Ft. Pierce, Fla., to include a machine shop, 1-story 40 x 40 feet.

The Marine Supply & Engine Co., Columbia, S. C., recently was incorporated by V. S. Sloan, R. O. Royall and others, to repair engines, etc. Contract for making alterations and repairs to the United States liner President Harding

## Business Changes

**POWER** Specialty Co., builder of superheaters, economizers and oil heating and cooling equipment, announces the opening of new branch offices in Detroit, in the Dime Savings Bank building, in charge of L. Lanyi, and also in Boulder, Colo., 2324 Fourteenth street, in charge of R. B. Nutting, who was formerly Chicago district manager.

\* \* \*

The Transcontinental Freight Co., New York, is to act as transpacific freight agent for the Pacific Mail Steamship Co.

\* \* \*

Offices of the Prest-O-Lite Co., Inc., have been moved from New York to the Speedway plant at Indianapolis.

\* \* \*

The Bertelsen & Petersen Engineering Co., Boston, has announced that effective Nov. 1 it ceased to engage in its present business.

\* \* \*

The Alexander Milburn Co., Baltimore, is now the exclusive representative of the Wilson Welder & Metals Co., 132 King street, New York, in Maryland, Virginia and the District of Columbia.

\* \* \*

The Garland Steamship Corp., in view of its increased intercoastal service, is establishing offices at Baltimore and other Atlantic ports of call. On the Pacific coast, the company will be represented by J. D. Spreckles Bros. Co. at San Francisco and Los Angeles and by the McCormick Steamship Co. in the north Pacific.

was awarded to the Robins Dry Dock & Repair Co., New York, recently on its low bid of \$94,000. Bids for similar work on the liner President Roosevelt have been opened.

Incorporated under the laws of Delaware, the Bimini Steamship Co. recently was chartered to equip and own steamships with a capital stock of \$100,000.

The Matson Navigation Co. is understood to be planning to increase its capital stock from \$5,000,000 to \$15,000,000.

The Dothan Machine Shop, Dothan, Ala., plans to rebuild its plant which recently was damaged by fire.

The Welding Service Corp., 2700 Boston street, Baltimore, has been incorporated with a capital stock of \$25,000 by Albert Lorch, Frank L. Druliner and William L. Emich.

The Lander Welding Co., 41 Chester street, Malden, Mass., plans the erection of a 1-story factory building, 40 x 50 feet.

Jenkins Bros., 510 Main street, Bridgeport, Conn., manufacturer of valves, etc., plan the erection of a new manufacturing unit to be built at an estimated of \$250,000. Lockwood,

Greene & Co., New York, are engineers in charge of the project.

The Bethlehem Shipbuilding Corp. will develop different lines of iron and steel products at its Moore shipyard, Elizabeth, N. J., and has contracted for the manufacture of 18 hydraulic filter presses for the Standard Oil Co. of New Jersey, to cost about \$300,000.

The Fore River Works, Bethlehem Shipbuilding Corp., Ltd., Quincy, Mass., has obtained a contract from the New York, New Haven & Hartford railroad for the reconditioning of locomotives and one shop of the plant has been turned over to this work. The railroad company will furnish a certain number of shop men and mechanical equipment required. The initial order is small and more in the nature of an experiment on the part of both the railroad and the Fore River Works. Should the work prove satisfactory, it is expected additional business of this nature will be forthcoming. The plant, with a small outlay can be adapted to locomotive repair work on a large scale without seriously disrupting shipbuilding and ship repair work.

The Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., has purchased the plant of the Harrisburg Bar Mill for expansion purposes. It will be maintained in operation and improvements made. E. C. Frey is treasurer and general manager.

The Orange Car & Steel Co., Orange, Tex., has been organized to take over the business of the Southern Dry Dock & Shipbuilding Co., Orange. The capital stock, which has been completely subscribed, is \$200,000. Car building and repairing comprise the chief lines of operation. S. M. White is president, H. J. L. Stark and F. H. Farwell are vice presidents and T. F. Coyle is treasurer.

The Bethlehem Shipbuilding Corp., Boston, has acquired the Simpson Patent Dry Docks, Jefferies Point, East Boston, Mass., consisting of three drydocks, plate shop, machine shop, power house and other buildings. Operation of the plant is proposed. It will be known as the Simpson Works of the company. S. Wylie Wakeman, general manager at the Fore River Works of the Bethlehem company, will act in the same capacity at the Simpson plant.

The St. Petersburg Welding & Machine Co., St. Petersburg, Fla., plans to establish a plant there. The company was organized recently by T. D. Orr, A. M. Galaher and others.

## New Trade Publications

**PUNCHING MACHINES AND SHEARS**—The Cleveland Punch & Shear Works Co., Cleveland, has recently published an illustrated pamphlet on the application of its products to different industries. Particularly interesting is the description of the use of punching machines, shears, bending rolls, and plate planers in shipbuilding and boiler making. Punches, dies and rivets sets of special steel are also described.

**THE GATES OF THE CARRIDEAN**—A 24-page booklet describes in attractive fashion the winter cruises of 1923 of the United Fruit Co., New York. The booklet is well made, illustrated with maps and copies of well done etchings of many points of interest in the tropics. William McFee, the well known tramp ship engineer-author, compiled the booklet. Detailed information is given in a separate folder in regard to itinerary, ports of call, time necessary and diversions provided. Three distinct voyages are mentioned, the Costa Rican, the Colombian and the Guatemalan.